

THE BRICKBUILDER

VOLUME XX

DECEMBER 1911

NUMBER 12

PUBLISHED MONTHLY BY ROGERS & MANSON

85 Water Street

Boston, Massachusetts

Entered at the Boston, Mass., Post Office as Second-Class Mail Matter, March 12, 1892.

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Subscription price, mailed flat to subscribers in the United States, Insular Possessions and Cuba	\$5.00 per year
Single numbers	50 cents
Subscription price, mailed flat to subscribers in Canada	\$5.50 per year
To Foreign Countries in the Postal Union	\$6.00 per year

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TOWER OF THE CHURCH
LA SANTISIMO, MEXICO CITY.

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NUMBER 12.

Forty-fifth Annual Convention of the American Institute of Architects.

AFTER a convention last year held on the Pacific Coast, the Institute of Architects returned again to Washington for its Forty-Fifth Annual Convention, held on December 12th, 13th, and 14th. While the convention was not marked by any new spectacular legislation on the part of the Institute, it was one marked by conspicuous unanimity of opinion on all the essential points of the various matters to which the Institute has given its attention for the last few years. The first morning session, on Tuesday, December 12th, was largely taken up by the registering of delegates, an address of welcome by General John A. Johnson, Commissioner of the District of Columbia, the address of the president, Mr. Irving K. Pond, and the appointment of the special committees who would have charge of the general work of the convention. Following this the reports of the Board of Directors, the treasurer, and the various standing committees were taken up, as well as the special committees, and these carried the convention over into its afternoon session, after which, as is usual in afternoon sessions, there were two interesting papers read. The real work of the session began on Wednesday morning, following the reports of the committees appointed to consider the various reports of officers and standing committees. This work again carried over into the afternoon session and was followed by a paper and then by general discussion on the subject of architectural education. In the evening occurred the interesting ceremony of the presentation of the gold medal of the Institute to Mr. George B. Post, in the National Museum. The remaining business and papers were largely confined to the morning session on Thursday, the announcement by the tellers of the election of officers for the coming year being put over to the afternoon session, which closed at an early hour with a few brief words by Mr. Walter Cook, the newly-elected president. The other officers elected were as follows: First Vice-President, R. Clipston Sturgis; Second Vice-President, Frank C. Baldwin; Secretary and Treasurer, Glenn Brown; Directors, I. K. Pond, John M. Donaldson, and Edward A. Crane; Auditor, T. J. D. Fuller.

The report of the retiring president, Mr. Pond, hinted briefly at the work accomplished and the progress made during the past year, and called for the unselfish support by the members of the Institute of all the vital matters which the Institute has at heart, the firm development of which means so much to the whole profession in the United States. The same attitude was echoed in the report of the Board of Directors with special reference to the great question of competitions, to which the recent committees have given such conscientious labor and the profession serious consideration.

The treasurer reported a most encouraging condition of the reserve fund and the general treasury.

The labors of the Standing Committee on contracts and specifications have reached fruition in the shape of a first standard edition, arrangement for the publication of which has been made with E. G. Soltmann in New York, who has for some years been the publisher of the Uniform Contract. These documents may well meet with complete adoption by many architects. In any case they cannot fail to be of very real value as standard forms by which an architect may measure up his own documents, which he has developed along personal lines and which he does not therefore wish to abandon, but which may well profit by comparison with standard documents such as the committee has put forth.

The Committee on Education has for the past year been particularly concerned with the development of the various lines of education open to draftsmen in addition to the regular courses in architecture at the universities.

From the committee's report it was very evident that it considered that too great specialization, by the comparatively young draftsman, in the matter of design is a very dangerous factor, and it urged everywhere the coordinating of courses in design with other courses in allied subjects, such as mathematics, construction, and history, in order to give the beginner in the profession some idea of the breadth of training necessary for one who expects at some time to be an architect in independent practice.

Mention may best be made here of the most admirable paper read by Mr. Lloyd Warren on Phases of Architec-

tural Education, in which he made a most eloquent plea for a broader development of the æsthetic perceptions of students of architecture through training in the allied arts of painting and sculpture. His remarks were greeted with no little enthusiasm by the convention, and it was immediately voted that his paper be printed by the Institute for general circulation.

The question of competitions was perhaps the one which brought forth the keenest general interest. The report of the Committee on Competitions reviewed briefly the various competitions which had been brought to its attention during the year, and it was of great interest to note the widespread acceptance of the code by owners, and also the evident desire upon the part of the members of the Institute to abide strictly by these terms. There were, of course, instances cited where competitions were frankly carried on at variance with the general rules laid down by the Institute, due either to a lack of understanding on the part of the owner or to legal difficulties, or in some cases to a definite refusal to modify personal desires to conform to an order of procedure which the Institute lays down for its own members, simply as one which in its opinion is best calculated to produce the best results both for the owner and for the architect. The fundamental point in the vote of the Institute two years ago in the matter of competitions was that it should be considered unprofessional conduct for a member of the Institute to take part in any competition *which had not been previously approved by the Standing Committee on Competitions*. The question as to whether the program for a competition conforms to the various rules of the Institute code concerns merely the committee and its various local subcommittees. The only question which a member of the Institute has to consider is whether the committee has definitely approved the program. That the ascertaining of this one fact is all that concerns the prospective competitor will be much more generally understood after the open discussion in the convention. A suggestion that the whole code be made merely advisory in nature, thus removing the mandatory character of certain provisions and destroying the fundamental strength of the code as now in operation, was overwhelmingly defeated. The fact of most general significance is that the evidence of the Committee on Competitions shows that the general public is rapidly coming to the conclusion that the rules laid down for the governing of the actions of members of the Institute in the matter of competitions are rules which should also govern the owner in the conducting of competitions if he is desirous of obtaining the most satisfactory result.

Perhaps the one other most important business of the convention was the authorization of the appointment by the Directors of a Committee on Public Information. For several years the Philadelphia chapter has had such a committee, and during the past year similar committees have been established in other chapters. Without question much can be done by a properly organized and active committee of this sort, through the distribution to individuals and publications of all matters of interest occurring at meetings of the various bodies of architects. In this way, for instance, the principles of the Institute code on competitions can be clearly set forth for the

enlightenment of all architects, whether members of the Institute or not, and of the general public. It should not be a difficult task also to complete the work, already started by the existing local committees, of creating a custom of giving proper acknowledgment of the architect when illustrations of recent work are published in the daily press. Seldom is a painting referred to in a newspaper to-day without due reference to the name of the painter; similarly with a work of sculpture. There surely can be no reason, other than a careless lack of appreciation, to excuse the very frequent publication of a building with no reference whatever to the architect, who not only designed the work but on whom rests the large business responsibility of carrying the execution of the work to a successful conclusion. The profession may well look for beneficial results from the establishment of this committee.

The Committee on Conservation of Natural Resources laid particular stress in its report this year upon the efforts which should be made to preserve the banks of the Potomac in the near vicinity of Washington by the formation of a national park, and the general commendation by the convention of such a scheme was expressed.

Mr. Totten, of Washington, made report of the last International Congress of Architects, held in Rome, and the convention voted to urge the holding of the Congress in 1917 in Washington, and urged the sending of a complete set of photographs of American architecture to the convention to be held in St. Petersburg in 1916.

Stress was laid upon the need of attention to systematic development of city and town planning, and it was urged by the convention that the work of this committee be so developed, if possible, as to bring the approval of the Institute, through its Board of Directors, directly to the attention of such bodies as are considering the development of districts through properly organized and adequately financed commissions.

A paper was read on the advantages of licensing of architects, by Mr. H. B. Wheelock, of Chicago.

Mr. J. Milton Dyer read a paper on the effect of competitions on design, showing that the government competitions under the Tarsney Act have helped largely in creating a government architecture at the present day vastly better than that which obtained before.

A most interesting talk on recent developments in paint technology was given by Mr. H. A. Gardner, Assistant Director of the Institute of Industrial Research.

The Octagon has been enriched by the gift, from the San Francisco Chapter, of the table on which President Madison signed the treaty of Ghent. He was at that time occupying the Octagon as his official residence, the White House having been burned down by the British.

The convention was brought to a close as usual by a banquet, on Thursday evening, at which the principal speakers were Senator Chamberlain of Oregon, Senator Hitchcock of Nebraska, Representative Slaydon of Texas, and Representative Kent of California. It was apparent from their remarks that the commission's plan for Washington, especially its site for a Lincoln Memorial, is not without its ardent supporters in Congress; but that the architects themselves should do their part in the forming of public opinion, and the bringing of that opinion to the attention of the members of Congress.

How Architects Work.

D. EVERETT WAID.

I.—OFFICES OF NOTED ARCHITECTS.

A STUDY of what architects do, where they do it, and the means they use, — is intended to be briefly compassed under the title, "How Architects Work."

As an introduction, it may be interesting to many to catch a glimpse by means of plans and photographs of the interiors of the workshops of some of the well-known members of the profession. Each observer will detect for himself the extent to which each workshop shows a

drafting room swells remarkably and suffers successive protoplasmic separations of private office, consultation room, library, specification room, engineer's room, superintendent's room, drawing file room, testing laboratory, photographic room, sample room, etc.

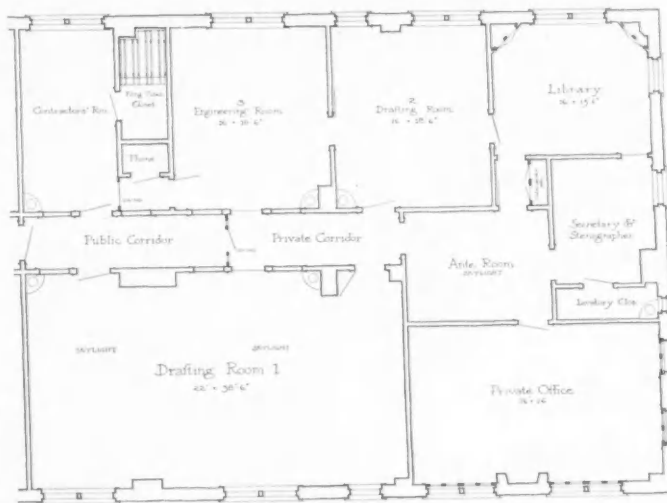
Let us imagine that our first visit to such a development of a real architectural shop is a call upon a great designer of hotels. He is located in a plain office build-



OFFICES OF H. J. HARDENBERGH, 47 W. 34TH STREET, NEW YORK CITY.

tendency as between an artist's studio and a cold business office; as between a dominant serene and well-lighted drafting room and an engineer's vibrant executive headquarters. Each imaginative visitor may speculate for himself as to the influence on the plan of each office due to the personal qualities and taste of each architect, or the volume of his work, or the class of work, if he specializes, or all those factors.

An architect's office in its beginning is a single room with one lone draftsman to give it a name. As soon as he scents a job and material dealers get wind of it and call too numerous, he curtains off an entry and gets a boy to close the door. The drafting room is still the consultation room for the client, and letters and plans and specifications are concocted on the same drawing board. In good time the entry grows to be divided into a business office for stenographer, letter files, and contractors; and the



ing, and inasmuch as his reception room is nothing more than a piece of the plain public corridor of the building, we are disappointed, and, in fact, are not quite sure that we have arrived. The open door at the left, however (marked on plan "Contractor's Room"), discloses a wide-awake office boy sorting blue-prints to issue to bidders or to file in the very small filing closet, and he takes our card and disappears. Very quickly

he returns to conduct us through the "Anteroom" (where first we perceive that we have entered an architect's domain) to the "Private Office." There alone, in a quiet spot, — so silent that not even the hum of New York streets or the distant rumble of elevated trains can be heard, is Mr. Hardenbergh quietly writing specifications. The roll-top desk is made to fit its place and the beautiful Florentine chair revolves as comfortably as the ugliest business chair could possibly do. As we are

greeted courteously by this gentle host, and the conversation turns to the table, the mantel, the rug, even the interesting fixtures which he has designed to light the mural paintings, and note the soft color harmony illumined by six plain leaded glass windows, which, at the same time, shut out unpleasant neighbors, we feel that the individuality of the architect must be impressed upon the client who comes here. This is not a domestic room, a room in a palace, nor an office. It is the studio of an

Next we turn our steps to 24th street and enter the planned outer office of Mr. Cass Gilbert. Here our first impression is unmistakable; we are in an architect's office. Sculpture and rendered drawings of magnificent buildings hold us enthralled while we try to propitiate the guardian who issues blue-prints over the counter at one side. Beyond the "Outer Office" everything seems business-like as we pass through the rooms of "Mr. G.," "Mr. A.," the secretary, and into the ex-



OUTER OFFICE.



DRAFTING ROOM.

OFFICES OF CASS GILBERT, 11 EAST 24TH STREET, NEW YORK CITY.

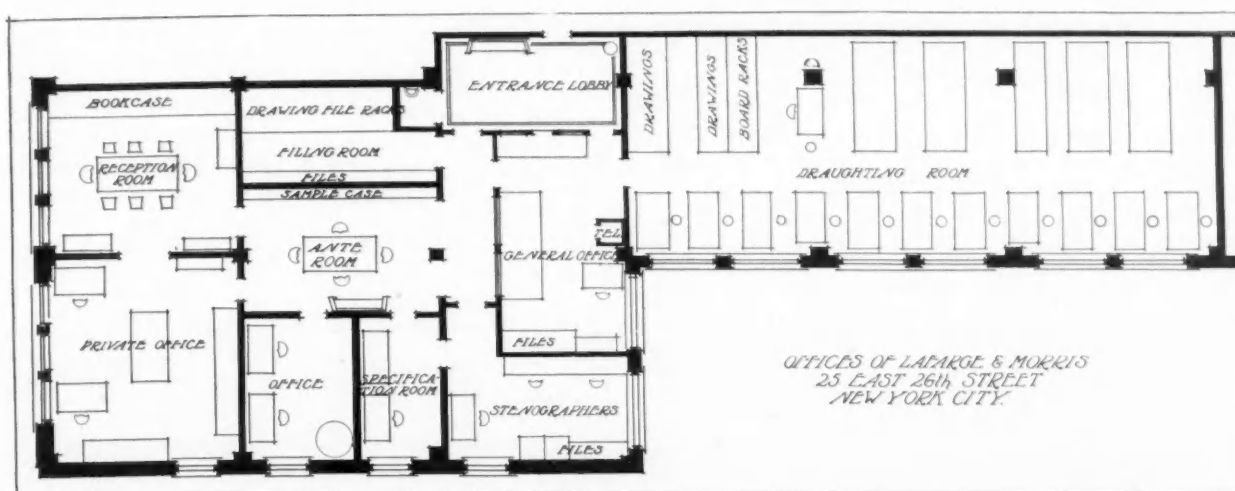
architect. The library near at hand is not different from others. Aside from its treasures of books, there is a conference table in the middle of the room and under one window an engraving case, such as one sees in print shops, in which are kept for easy reference some of the fine interior scale drawings which should not be ruined and lost among files of blue-prints. We pass through the suite of simply furnished rooms, note the two drafting rooms with boards all neatly protected with cloth covers (it is Saturday noon and the draftsmen have gone home), and the engineering and specification rooms. Before we end

our call we have seen the floor plan of a Titanic new hotel with its admirable scheme of circulation, and then Mr. Hardenbergh refers to that nuisance of an architect's office, the filing of drawings, expresses the preference for flat filing instead of rolls, and mentions as hope deferred the famous file room of Carrère & Hastings.



ecutive offices of "Mr. W." and "Mr. R." Bidders probably take drawings to their own offices and never see the "Contractor's" room, which is in reality a sample room. The walls are lined with "unit" bookcases whose glass fronts save the necessity of dusting innumerable pieces of hardware, bricks, and marble. This is also the mailing and general utility room. The wealth of the library is easily accessible from either the drafting room or the executive offices. When we enter the drafting room we get a vista of endless drawing boards. Roll-top desks are located on opposite sides of the column, one for the

mechanical engineer and one for the specification writer. Immense steel cases stand against the side wall, with drawers six feet long or more, topped with box files of drawings of completed buildings. Each draftsman has a wire wardrobe locker placed as indicated. The room designated on plan "Mr. J." is a small drafting



room, a desirable feature in every large office. Business is in progress, a conference is on in the reception room, so we must call again to see that handsome sanctum which opens from Mr. Gilbert's private office and commands a fine view of Madison Square.

Many of the New York architects are to be found around Madison Square. We shall wish to call upon three, all in one building at the north end near Madison Square Garden and the Society for Prevention of Cruelty to Animals. The first of these is the firm who designed the Lion House, the Reptile House, and others in Bronx Park, where is to be found the finest Zoo, not even excepting that at Amsterdam. Heins & La Farge, now La Farge & Morris, have a long narrow drafting room with eastern light. The reception room and library looks out on the Park through south windows. It is simply furnished, but has a reversible table worth going a mile to see. An attractive decorative effect is given by the books, a piece of tapestry, a large example of Japanese carving, and a fine perspective of the Cathedral of St. John the Divine. One passes from the "Anteroom" or from the "Reception Room," into the "Private Office," where both members of the firm have their desks. The very plain "Entrance Lobby" which one sees first on entering this office is floored with richly colored tiles. Opening a glass screen door, the visitor then finds himself in a spacious "Anteroom" with a floor which is a testing out of an almost white composition. The plan suggests clearly the arrangement and furnishing of the convenient and well-lighted office of La Farge & Morris.

If we take elevators to the roof of this same twelve-



story building, which was designed by our next victims, Maynicke & Franke, we shall see an example, an exceptional one, of a New York "pent house." Since they

have all there is of a thirteenth story, we land from the elevators in, not a public corridor, but their own private hall, which is simply decorated with enough perspectives to impress the visitor that he is in an architect's office. The "Hall" is part of the generous "General Office," which is made impressive with an immense color representation of St. Mark's at Venice, hung opposite the fireplace. Before one can reach the hotel-like counter, his approach is detected by the telephone lady and he can quickly learn whether he may see one of the firm.



DRAFTING ROOM.

flooding the room with draftmen's soft northern daylight, which combine to make an exceptionally spacious and well-ventilated and lighted workroom—another worthy architectural studio.

Turning our attention now to a third office in this same building, we call upon Donn Barber. We enter the "Reception Hall," which is treated in tones harmonizing with light oak. It breathes a gentle, refined welcome and makes us know at once that a designer's atelier is somewhere near. There is, however, at the guardian's

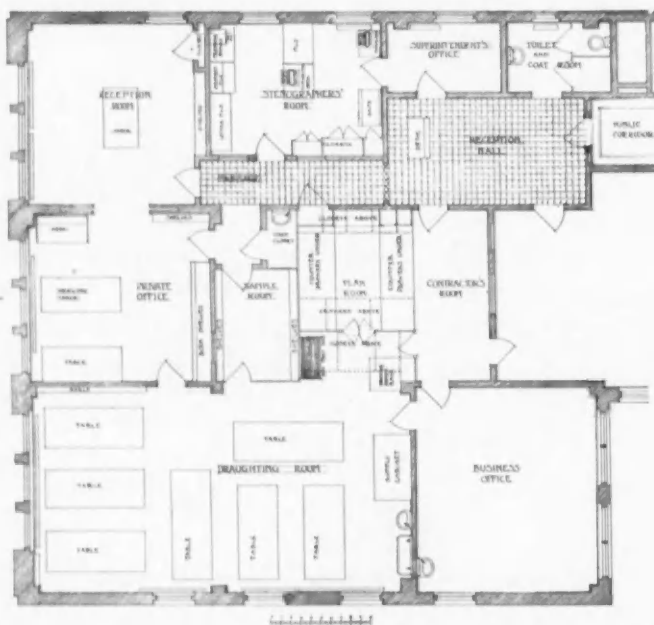


PRIVATE OFFICE.

OFFICES OF DONN BARBER, 25 EAST 26TH STREET, NEW YORK CITY.

On this occasion, we are ushered into Mr. Franke's room, which has a floor of cork tiles, and walls covered with very white oak wainscot and bookcases. The table covered with rare books, the flat-top desk, and the chairs, are dark mahogany. When we visit Mr. Maynicke's room, we may discover that both partners are expert amateur photographers and can show us some of the marvels of color photography and a model dark room in which they are developed. A new exclamation of surprise is elicited when we go into the drafting room.

Here is the Grand Central Terminal of drafting rooms. This pent house, not hampered with a low roof, has a lofty vaulted ceiling and four great bays of windows



desk in front of us a smiling, polite, young major domo, who knows that Mr. Barber is out at the present juncture, and who is sure moreover that we could not possibly be interested in an office without Mr. Barber in it. He is quite right, for we believe that the plan tells quite a bit about Mr. Barber. Note how he placed the business end of the office, touching the drafting room at one end, and the reception room at the other, and how the primary designing board is hedged on both sides. The interesting arrangement of the office and

relation of its parts are evident on plan. Perhaps we may have some details to consider in a subsequent issue.

THE ARCHITECT'S LIBRARY: J. H. Sellars, in discussing "The Architect's Use of a Library," says that it is doubtful if the old architects understood the history of art as we do to-day. Knowledge of history obtained through our books and photographs impresses

upon us the fact that great styles are based on reason and logical construction, and that buildings to be considered great must fulfil their purpose. Wide reading will aid us in the formation of an artistic character and a power of æsthetic reasoning.

H. VAN BUREN MAGONIGLE.

It is only in modern times, however, that monuments have arisen by reason of the desire of the people to honor their great men. In earlier days men erected memorials to themselves or to their gods; the narrow ways of Grecian Olympia were crowded with statues of victors in the games, paid for, with exquisite modesty, by themselves; the despot, king or emperor, decreed his own monument and superintended its erection, having no

The statues, arches and columns of the Roman emperors may be considered as manifestations of a similar spirit; the Cæsar did not wait for a venial senate and a servile populace to come forward, but attended to the matter himself. In Gothic times men's eyes were fixed upon

hand with cenotaphs of every form; and from the Mausoleum of Halicarnassus down to the humblest stele that affection had raised over some beloved clay, the last resting place of king or helot has been the object of tender commemoration. In the Helen of Euripides occurs this invocation: "All hail! My father's tomb! I buried thee, Proteus, at the place where men pass in and out, that I might often greet thee; and so, even as I go out and in, I, thy son Theoclymenos, call upon thee, father!" But these were marks of personal or family affection, vestiges of the ancient propitiatory worship of the ghosts of the departed, as others we have noted were the products of personal vanity; and it is not until the Renaissance that the modern spirit is made manifest; then, men nurtured in the Christian faith but made



LION OF LUCERNE, LUCERNE, SWITZERLAND.



STATUE OF CHESTER ALAN ARTHUR, NEW YORK CITY.

mentally free by a new contact with the antique world of thought and art began to build monuments to others than themselves or their immediate family and friends, out of a real desire to do them honor.

There is another class of monuments that must be noted — those which signalize an event or an idea or abstraction, and in which the individual has no part or a very subordinate one. These present a still greater ethical advance — the "Triumph of the Republic," the "Peace Monument," the "Dying Lion of Lucerne"; at the École des Beaux Arts one of the problems given was a monument "To all the Glories of France." In such monuments the mind is entirely divorced from the personal and is centered upon a pure abstraction.

Allied to these are memorial fountains which may be so conceived as to appeal to us by their beauty or interest, and the great part they may bear in the general monumental aspect of a city.

It is not proposed here to treat of monuments as isolated facts either from their human side or as mere masses of stone and bronze; they are to be discussed as forms in which men have sought to embody their sense of reverence for the great man or act or idea; in reference to their merits or demerits as works of art; but also we are to consider them on broader lines as elements that may under proper conditions contribute to the beauty of a city; without monumental conditions we fail of truly monumental effect; in Europe we find these conditions in far greater measure than here; and especially in France the treatment of the site, approach, and *entourage* are given careful consideration. Upon the harmonious interrelations of these depend much of the effect of the monument upon us whether we are actively conscious of it or not.

To be properly successful, a monument must be designed for a definite spot, and designed in reference to that spot and to no other.

The designer must take many things into account —

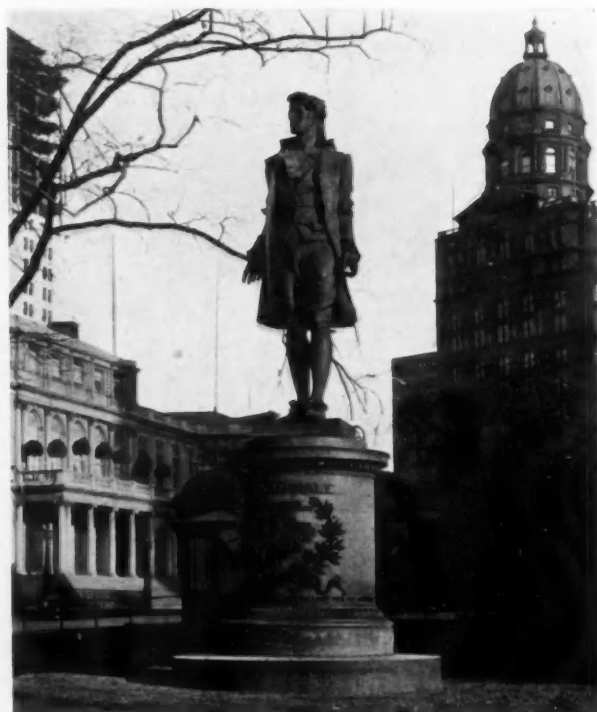
he must study the approach, the effect from a distance, the scale of the parts to the whole, and the scale of the whole in relation to that of the immediate surroundings.

If the monument is to be placed where it will have a building as a background, he must study the architecture of that building, and if this is broken and restless, the quieter and simpler his design the better. If the building is severe in character, he could permit himself a richer silhouette, and more action in the sculptural adjuncts, bearing constantly in mind, however, that harmony must result.

Again, if the composition is to be placed at the intersection of several streets or at any point where a distant view of it, outlined against the sky, is to be had, he must design the silhouette as it will appear against the sky, and having thus determined the form and the accent that will tell best at a distance, subordinate the details to this general effect.

The problem in a park is to be solved in an entirely different way, and yet in obedience to the general principle that the surroundings must determine the character of the design. In a park the question of the color of the monument plays an important part in its relation to that of the foliage. It is fairly questionable if a dark bronze statue, for example, is seen to the best advantage with trees as a background; its color and its shadows confuse themselves with those of the foliage, and the essential elements of clarity and repose are lost. In France white marble is a favorite material for park sculpture and tells best against the green. If bronze is to be used for the sculpture, it would seem reasonable to so design the composition that the bronze may be seen against a background of light stone, which in turn defines itself against the trees and shrubs.

It is to be borne in mind that a monument in any form,



STATUE OF NATHAN HALE, NEW YORK CITY.

whether it be a statue, a shaft or a fountain, is a formal thing—that it commemorates something—some man, some act, some word or idea, and to the poorest and least artistic is thereby imparted a certain dignity which demands a setting and approach of equal dignity.

It is moreover what we may term an artificial form, bounded by more or less rigid and conventional lines, and its immediate *entourage* must be so treated as to blend these lines imperceptibly into the lines of its surroundings, whatever these may be. This is a principle so obvious that it seems scarcely necessary to enunciate it, but to judge from the examples we have in our midst of a neglect or non-recognition of this principle, we might be led to believe that it does not exist.

In a park or square with trees and shrubbery, it is imperative that just around our monument, at least, there should be an adequate formal treatment of the paths with perhaps a certain modeling of the ground and turf that will serve to unite the conventional architectural lines with those of that strange imitation of nature with which most of our landscape architects provide us.

I have in mind, among others, two particularly vicious examples of neglect of this basic principle in New York—one is the statue of President Arthur in Madison Square, which rises in sweet simplicity, sometimes out of a flower bed, sometimes out of the turf, as the fancy of the gardener dictates, in such a manner as to suggest irresistibly the conclusion that it also is a vegetable growth—the other is the statue of Nathan Hale, a really beautiful thing, in City Hall Park, and which is also placed without relation to anything whatever except the grass that grows around it.

In paved open spaces there are to be found, in the circumjacent buildings and sidewalks, lines that will help

to support and repeat those of the monument—yet even here a tie, a more obvious relation is needed such as a fine pavement affords, designed in relation to the monument, as in the great square before St. Peter's in Rome;

or in the court on the Capitoline hill around the statue of Marcus Aurelius.

So much for the treatment of the monument and its setting; the broader question—that of the absolute necessity for monumental

conditions if the monument is to produce its proper effect—is the one I wish to emphasize, and that not only a harmonious setting but a proper approach are absolutely essential to dignity.

As things are at present, the designer of a monument is seriously handicapped. He designs his monument for a certain site, and as much as possible in harmony with what he finds about it. The monument is erected; the next day ground is broken close by for a twenty-story building, and his monument is killed.

The "sky scraper" thus creates a new condition, and will probably banish all monuments, other than low fountain basins and perhaps statues, to the parks where they will not be forced to compete with the mass of these enormous structures. The tall building has come to stay, is the outcome of legitimate conditions, and must therefore be reckoned with.

There is thus a distinct relation between the character of the city street or square and any monumental project. Let us take a street in Paris and assume that the vista is closed by an important monument. The buildings on each side have cornices of a uniform height, and horizontal

divisions that coincide, and within these limits compositions that vary sufficiently for their individual interest. Calm, quiet, monotonous if you please, but the monument tells—it carries, and we find, when we analyze the effect



VIEW FROM CUPOLA OF ST. PETER'S IN ROME, ITALY.



STATUE OF MARCUS AURELIUS, ROME, ITALY.

of the vista upon us, that this calm, that this quiet monotony is a foil, a preparation for the richer composition that fronts us at the head of the street—that the eye is unfatigued and can therefore appreciate.

Now let us assume for a moment that we have a street in New York leading up to an important monument (we haven't, but never mind); a typical street, with the buildings leaping to all sorts of heights on either hand, each more ornate than its neighbor, each making its own frantic appeal for notice. What would become of the monument? Would you care for it when you reached it? Would your eye feel rested and ready to examine it with interest? Wouldn't you feel as you would if you had dined entirely on cake—that pudding was superfluous?

Mark the difference! Both are commercial streets; in both instances the buildings are commercial buildings and have no claim upon our special interest. But the monument has. It stands for something greater and finer than mere business, and should be led up to; the attention should not be distracted, but directed, and we should carry away with us a definite impression of the nobility and grandeur of the composition of which street and monument should be integral parts. It is the whole monumental effect of things that is of real importance. Monotony has its uses. Absolute monotony is as tiresome as constant variety, but it is the just relation and proportion of each that makes for the monumental.

In stating that we have no street in New York leading up to an important monument, I want to make an exception in favor of Fifth Avenue and the Washington Arch, and the streets leading up to Columbus Circle and the column there. For this, the present plan of the city is responsible.

Let us compare the plan of the city of Washington with that of New York.

There we find radial avenues of magnificent width, starting from well defined and monumental centers, intersecting each other at minor centers where small parks are managed. These small parks, and other larger ones, lie on the axes of these avenues, so that any public embellishment placed there will have an axial approach in at least four and often more directions.

The minor streets are laid out on the gridiron plan so familiar to us, and where the diagonal avenues cut across them numerous triangular spaces are created.

With what result? A varied and rich perspective, a series of charming vistas accented or closed by some object of interest—a statue, a fountain, or a building.

Return to New York and we are struck at once with the fact that Broadway is the one diagonal street above the downtown district, and that the only points at which real

architectural interest is possible are created by its intersections with the avenues.

Some of these triangular spaces along the line of Broadway are occupied more or less adequately by monuments; others are found in the badly planned parks and squares, where winding paths take you just where you don't want to go, in a silly, futile effort to

produce a *rus in urbis*; and scarcely one satisfactory site can be found in them for any monumental purpose. I do not wish to be understood as insisting that parks and squares should be created for the purpose of

putting monuments in them. But I do insist that it is silly to attempt to produce the effect of a pastoral landscape in the heart of a city in any space of the size of our principal squares, that a certain formality of treatment is imperative in a city square, and that then, when a monument is to be placed, a decent and dignified approach and setting may be found.



WASHINGTON ARCH, NEW YORK CITY.



PLACE DE LA BASTILLE, PARIS, FRANCE.

The Design of a Physical Laboratory.

ALBERT P. CARMAN.

THE design of a highly specialized building like a university physical laboratory presents many problems outside the experience of the general architect. The literature on the design of such buildings is very meager. A number of laboratories have been described in a general way, but often with particular emphasis on fittings and apparatus and with little, if any, discussion of the problems supposed to be solved in the design. The following article, it is hoped, will help fill this deficiency. The writer had the responsibility of making specifications for the design of a physical laboratory for the University of Illinois, and was in consultation with architects and superintendents during the erection and equipping of the building. It is believed that an explanation of the plans finally used will aid those who have to design this type of building.

About twenty leading physical laboratories in this country were visited, and the floor plans of practically all of the recent laboratories secured. Several months were spent in making floor plans after various schemes. In this preliminary work an architectural student was employed to make drawings to exact scale. The possibilities and advantages of various schemes were thus made manifest, and the essential principles to be followed in the design became evident. In these preliminary studies as well as later, Prof. J. M. White of the Department of Architecture and Prof. C. T. Knipp of the Department of Physics were active workers. This preliminary work was done before the election of the architect, there being a delay of several months in his election, and the result was that a very complete and definite list of conditions was furnished him. The architect found the general results of these preliminary studies very helpful, and nowhere asked for a sacrifice of technical requirements to get architectural effects.

The character of the work in physics, which consists of the usual undergraduate courses, and of a considerable and growing amount of graduate work and of investigation, fixed the number and general character of the rooms desired. The site was also fixed, a rectangular space of about 250 feet square with a south front for the building. Fortunately or unfortunately, the University has adopted no style of architecture, so there was no question of adapting ecclesiastical windows or projecting buttresses or classical columns to the requirements of unrestricted light. Such architectural styles present very difficult problems in laboratory design. They have been solved more or less successfully, but the difficulty is such that we cannot wonder that more than one pro-

fessor has suggested that the best style for a laboratory would be that of the common workshop, and perhaps with saw-tooth roof construction. But efficiency is not in conflict with dignified architecture, and a university physical laboratory should be an attractive building to conform to the importance of the science in university work. The exterior of a physical laboratory is important to the man of physics, principally in its allowing a convenient window spacing, with unobstructed light, as well as being inexpensive, so that no interior convenience need be sacrificed. The style chosen as appropriate to our surroundings fitted our requirements and money, and gave us a dignified and pleasing exterior without sacrificing interior plans. The elevation and the four plans discussed below are shown in the accompanying illustrations.

Freedom from mechanical disturbances is of such obvious importance for much of the work in physics that it received early consideration. Since the laboratory is for university instruction the location is necessarily central, and that means in the midst of various activities which may cause vibrations. The first thing decided was to use extra heavy masonry walls and as far as possible to

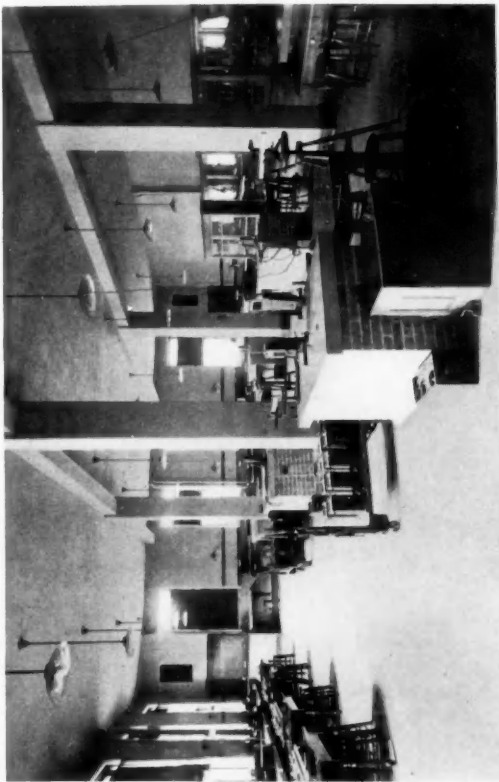
carry the floors on masonry walls rather than on steel columns. This involves many cross walls which run the full height of the building and give a rigid cellular design as seen in the floor plans. Over three million bricks were used, probably twenty-five per cent more than would be used with steel columns in a building of this size.

Next came the effect of room arrangement and of equipment on stability. To avoid the disturbances caused by the movement of large classes of vigorous students the large laboratories and the class rooms are put on the west side of the building. Most of the students naturally use the west entrance, so that this design minimizes the travel across the building. The east side of the building is thus given over to the twenty-five smaller laboratories which are used by advanced students and individual investigators for the more delicate experiments. This side of the building is much heavier in construction owing to numbers of interior masonry walls.

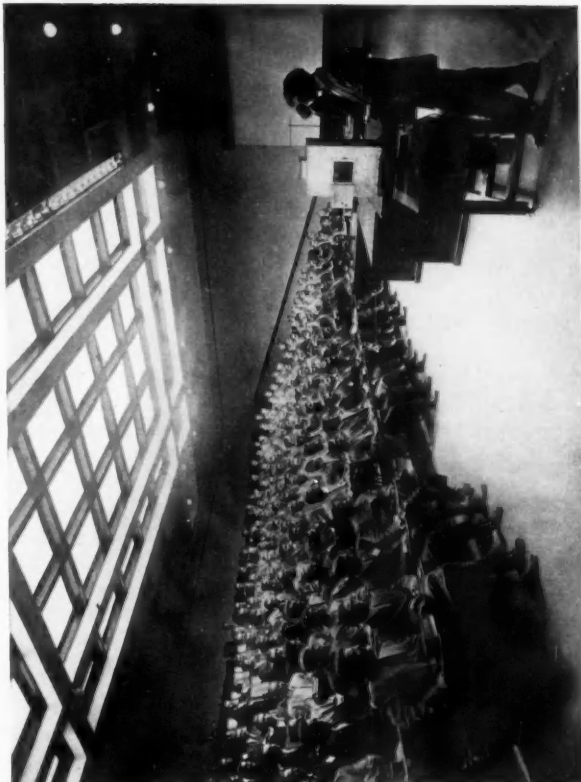
An equally important question was the location of moving machines. The ventilating fans, the liquid air plant and department machine shop are placed in an annex building which has a foundation separate from that of the main building. A hydraulic plunger elevator was installed partly on account of its simplicity and safety, but mainly because it introduced no rotating machinery. All the rotating machinery in the main



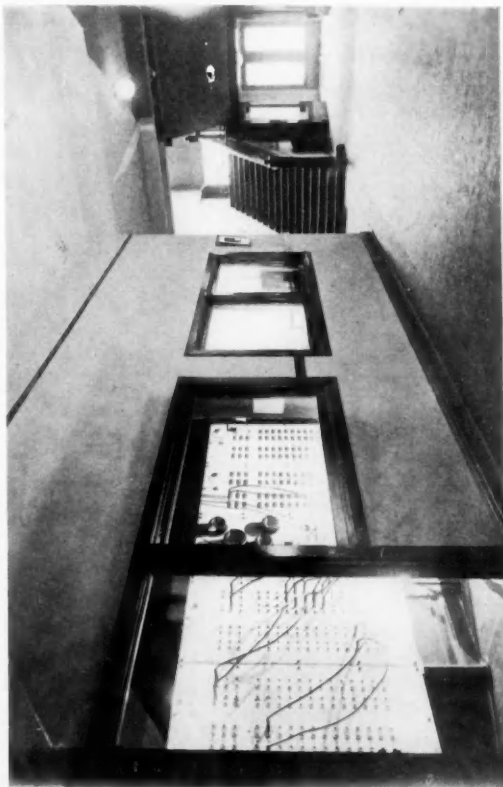
LABORATORY OF PHYSICS, UNIVERSITY OF ILLINOIS, URBANA, ILL.
W. Carlys Zimmermann, Architect.



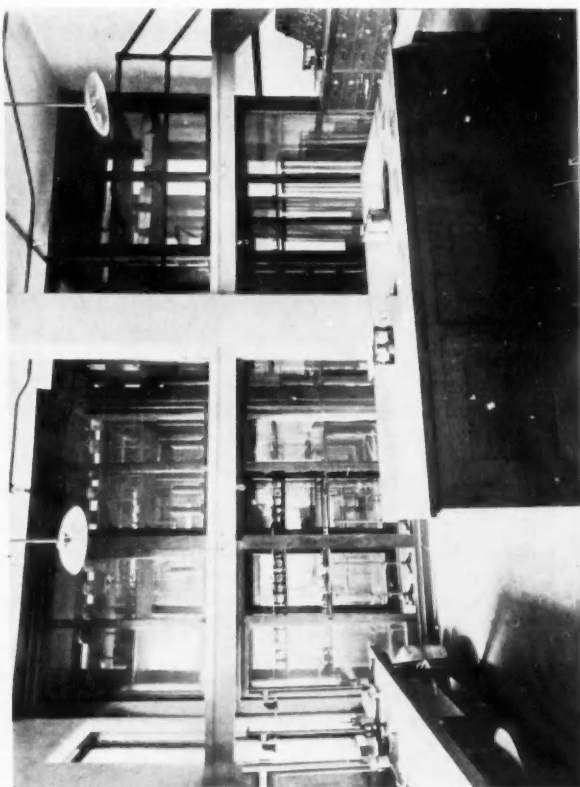
PRECISION MEASUREMENT LABORATORY.



LECTURE ROOM.



EXPERIMENTAL SWITCHBOARD.



PREPARATION ROOM FOR LABORATORY.

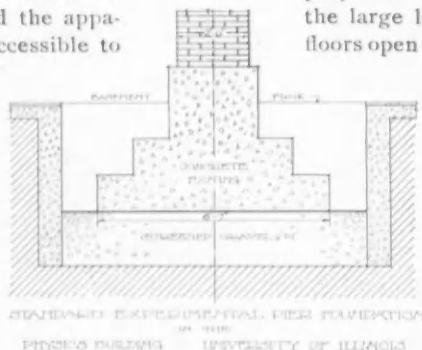
INTERIOR VIEWS, LABORATORY OF PHYSICS, UNIVERSITY OF ILLINOIS, URBANA, ILL.

physical experiments which test to the limit the standard masonry pier. To meet this exceptional but important demand three special piers were constructed after the plan shown in the accompanying illustration. A heavy block of concrete was built on a thick bed of loose gravel. By using oil cloth over the gravel the concrete formed without becoming part of the gravel, and was thus "floated" on the gravel. The pier was then erected in this floating foundation. The loose gravel transmits few if any vibrations and the inertia of the heavy concrete foundation and pier is an additional protection against vibrations. A pier of this kind will stand the test of a free mercury surface.

While stability is demanded in a physical laboratory, the question of convenient arrangements, service rooms and "circulation" or ready access is none the less important in a laboratory as large as this one. The first question in arrangement was the location of the large experimental lecture room. A lecture room requires higher ceilings than the ordinary room on account of the raised seats and its size. It must also be convenient to a preparation room and the apparatus cabinets, and should be easily accessible to the auditors. To obtain the higher ceiling without breaking floor levels the lecture room is often put on the top floor. This would have involved in our case a climb of two or perhaps three flights of stairs which was undesirable for several reasons. The problem was finally solved by using the court between the wings for two lecture rooms and a preparation room. The access is easy and the location reduces the disturbance of the coming and going to a minimum. The lighting is by skylights with a north exposure and no side-lights; allowing the room to be quickly and completely darkened by horizontal screens rolling on tracks between the skylights and the glass ceiling. The size of the lecture rooms forms a question on which there is evidently much difference of opinion. After a thorough test it was decided that 50 feet should be the maximum distance of any seat from the lecture desk for an experimental lecture. Using a standard opera chair with folding tablet arm there are 265 seats within this radius, which number is ample since, for teaching efficiency, a lecture section of over 200 is undesirable. The second lecture room seats 120 and shares the preparation room with the larger lecture room. An apparently minor point that caused much thought in the lecture room design was the position of the entrance. A rear entrance is undesirable because it is not in full view of the lecturer and so encourages tardiness. The entrance should be placed so as not to interfere with the passage from the desk to the preparation room. In a physics lecture room it is desirable to have a diagonal curtain across one front corner so that a lantern can be operated for projecting experiments. These requirements are met very satisfactorily in the larger lecture room and fairly so in the smaller lecture rooms. There is a scheme used in some foreign laboratories of having the entrance to the preparation room and cabinets directly back of the

lecture desk, with sliding blackboards and a projection curtain coming down over this entrance. It seems, however, better to keep the needed blackboard and curtain independent of an entrance.

The location and arrangement of the apparatus cabinets is a special feature of the design. These are placed in the north central part of the building and extend through three stories. The principle of the library stack is used, a mezzanine floor being introduced on each story. This scheme practically doubles the available apparatus room. These stacks are accessible from each corridor by a special stairway and by an elevator. The elevator shaft runs from the unpacking room in the basement to the fourth floor and has openings to the main corridor on each floor, and also to each of the six floors with apparatus stacks. By using large rubber-tired trucks which can be run on the elevator it is easy to transfer heavy apparatus to any part of the building. The central location of these apparatus stacks makes them convenient to all the working rooms of the building. Indeed the



preparation rooms for the lecture rooms and for the large laboratories on the second and third floors open directly into these stacks. In addition to these central cases each small laboratory is fitted with a case for the apparatus and supplies which are in current use in that room.

For each large laboratory there is a preparation room supplied with facilities for adjusting apparatus and making minor repairs, and also an administration office with assistants' desks where reports are corrected and records kept. On each floor there is a chemical room and one or more photographic rooms. Interior dark rooms are also found in several of the smaller laboratories. Some of these laboratories are fitted with double curtains held in place by deep side slots so that the room can be easily darkened for ordinary purposes. The device of using double curtains bound together but mounted on separate spring rollers fixed vertically over each other is due to Prof. D. C. Miller. It is inexpensive and satisfactory.

The class rooms, seminary room, offices, coat rooms, etc., involve no questions peculiar to laboratory design. The experimental electric circuits and switchboards, and the distribution of gas, water, and compressed air are important features in a modern laboratory, but they are perhaps more in the nature of equipment rather than subjects of design. For the extension of this wiring and piping either temporary or permanent accessible shafts are provided in all parts of the building. This provision cannot be neglected in a fire-proof building.

The fourth floor is also completely finished. It contains extensive photographic rooms with a large north skylight and rooms which are available for various experiments in light, sound, and electric waves. There are no special points of design involved in the planning of this floor.

In addition to the question of general design in the planning of a laboratory there arise many questions in the design of the individual rooms and in their fittings, but these questions of detail are beyond the purpose of this paper.

Legal Hints for Architects.—Part VI.

WILLIAM L. BOWMAN, C.E., LL. B.

Architect's Authority. While our considerations of the duties of the architect have naturally given us a general knowledge of his authority, yet, even at a risk of some repetition, it is felt that a more specific consideration of this most important subject is essential. The legal status of an architect may vary considerably by reason of or during an employment. There have been instances recorded where he has been not only agent for the owner but also for the contractor, an independent contractor himself and also an arbitrator or quasi-judicial officer. This statement in itself shows how careful an architect must be not only in the various engagements which he may accept upon a single job but in his actions and decisions, torn as he usually is by many opposing claims of interest and acting as he frequently does in situations which require determinations and decisions adverse to his own personal interests. The architect well knows that primarily he is the agent of the owner, the man who pays him and he acts accordingly, but he often fails to remember that he cannot act for or receive compensation in any way, shape or form from a contractor, subcontractor or material-man without securing the previous consent of his employer. This matter has just lately been considered in an important decision. An architect who had the usual contract of employment with an owner contracted with a certain firm of engineers without the knowledge of his employer and without telling him about the arrangement, whereby the engineers were to prepare the plans and specifications for the mechanical equipment of the building, with the understanding that if they obtained the contract for the work they would make no charge for such plans and specifications so prepared. Later these engineers did get the contract, being the only bidders. As a matter of fact the arrangement did not in any way increase or decrease the amount which the owner paid for his complete plans and specifications. After the owner learned the facts he refused to pay the architect, and upon action brought for the architectural services the court held that the contract was severable, and by this breach of duty upon the part of the architect, he had thereby destroyed his right to compensation for any part of the contract in which the arrangement could have any bearing or influence. The court then decided that upon these facts the architect could not recover for superintendence nor for the furnishing of the completed plans and specifications, or in other words he could only recover for his preliminary plans and specifications. This seems a very drastic decision under the circumstances, but the opinion states that it is based upon sound public policy and asks the following pertinent inquiry: "Under these circumstances, how could they (the architects) give their best judgment and experience, to say nothing of good faith, in passing upon the working plans furnished by McW. & Co., or in advising their principal as to the best bid for furnishing and installing the mechanical equipment?"

This principle of fair dealing with the employer and owner entitles him after knowledge of any surreptitious

dealing between the architect and any other person connected with the work to dismiss the architect. In addition to the loss of employment such architect may be sued and the employer permitted to recover not only whatever money the architect has secretly received but even the commissions earned and previously received from the employer.

As the owner's agent, the architect is spoken of either as the general agent for all purposes within the contract, or as a special agent with limited powers. From the standpoint of the architect he should consider himself a special agent and construe his authority strictly. The general rule of agency as between the employer and a third party is "that the extent of the agent's authority is to be measured by the extent of his usual employment." Hence as a practical matter the architect's authority must be gathered from the clauses of the building contract, the general conditions of the specifications, and as they can be inferred from the acts of the employer or by custom. The contractor is not bound by any special instructions given the architect by his employer which are not made known to him. For example, if there is a secret arrangement that the building shall not cost more than a certain sum, and where the builder is by the contract bound to obey the directions of the architect as to the work he shall do, such secret agreement is not binding upon the builder, and such restriction of the architect's authority will not be permitted to prejudice the builder's rights.

Where the limits of the architect's authority are clearly set out in the building contract, such authority must be strictly followed, but at the same time the authority given will be ordinarily construed to include permission to use all necessary or even usual means of carrying into effect the purpose and intent of the employer. Regarding these implied powers, a few examples will be given to show their application. There could be no implied authority of the architect to allow adjoining owners to build the projecting ends of their girders or roof beams into the wall of the house, but a provision that all extras or additions should be paid for at the price fixed by the architect does imply power in said architect to determine what are extras under the contract. The mere employment of an architect by an owner cannot imply authority to select and engage a contractor for the work, although in England employment would probably give the architect power to engage a quantity surveyor to take out the quantities. Thus it will be seen that the implied authority of the architect must depend chiefly on direct and clear inference from the express terms of the building contract or on custom.

Speaking generally then, as the owner's agent the architect is intrusted only with power to see that the works and building construction contemplated by the contract are properly executed and completed. He cannot obtain bids nor enter into a contract for his employer, nor can he change, alter, or modify such a contract or its conditions. If there are omissions in the plans and specifications, the architect has no implied authority to

order such omissions, and this is true even if the plans and specifications are impracticable as they exist. An architect cannot invite people into a building being constructed and thereby render his employer liable for any damages accruing to such persons by reason of the defects of the building. The weight of authority seems to be that an architect cannot waive the contract conditions as to the method of ordering extras, additions, etc., nor the contract conditions as to payment and architect's certificates. A verbal extension of time to complete a building given where the contract has a time limit and requires a written extension has been held not to bind the owner nor enable the contractor to take advantage of such honest and equitable extension. The architect cannot receive or disburse moneys for the owner unless specially authorized. As agent of the owner he probably does not warrant the plans and specifications as correct, nor that the work can be successfully executed according to said plans and specifications. Notice that this merely means that a builder can not recover from the owner damages for such defects, or in case of accident the person injured cannot recover his damages from the owner. In this phase of the employment the architect is considered an independent contractor, and as such he is personally liable for defects in his plans and specifications or for his failure to reasonably superintend.

The result of acting without authority will now be briefly stated so that it may be kept in mind when we come to consider the various building contract clauses of interest herein. Where the architect orders material or work professing to act for his employer, he impliedly warrants to the contractor or subcontractor that he in fact possesses the authority which he assumes to exercise, and for the breach of such warranty he becomes liable for the damages suffered. If the architect's action is with knowledge that he does not possess the authority, it is probable that he could be held liable by the contractor for the damages in an action for deceit. Again, if, as has happened, the contractor first sues the owner who wins the case on the ground that the architect had no authority to order the material or work in question, then upon action brought against the architect the contractor can recover not only for the material and work which he furnished, but also as damages recover the expenses of his action lost to the owner.

As has already been shown, in the ordinary everyday employment of an architect there is no specific and definite contract of employment, so that the architect has to depend principally upon the building contract to ascertain his legal position and rights. On this account we will continue our consideration of this subject in connection with our consideration of the most common contract clauses now in general use.

Contract Clauses. Experience has shown that the early contract statement, "which drawings and specifications are identified by the signatures of the parties hereto," is often neglected, thereby causing much trouble. The contract is always made in duplicate and signed and exchanged by the parties thereto; why should not the same method be followed regarding the plans and specifications which are the real basis of the contract? Any disputes or lawsuits over a building contract always involve the architect, and it is to his interest, not only

professionally but also from a financial standpoint, to do everything in his power to prevent misunderstandings and legal proceedings as far as possible.

Since the plans and specifications "become hereby a part of this contract," the architect should take care that his "General Conditions" in the specifications are consistent with the contract. There seems to be a necessary conflict in this regard because in such general conditions the architect always tries to relieve himself of as much responsibility as possible, while the owner in drawing or having the building contract drawn is primarily thinking of the obligations which the builder and he are about to assume. While the general rule of construction is that the contract clauses control the general conditions of the specifications, yet there is also a legal rule of construction that where it is possible each and every part of a contract (including the plans and specifications) must be given its full meaning. Hence the conflicts between the contract clauses and the general conditions are a constant source of mischief and litigation which with more care on the part of the architect could probably be avoided. This raises another interesting question for the architect. Suppose the architect has general conditions containing the following: "The architects do not assume any responsibility of any kind, financial or otherwise, in issuing these instruments of service, but are considered simply as advisers of the owner," and the owner refuses to accept such a condition and the architect refuses to change it. Such a situation did arise after an owner had accepted the completed plans and specifications and was about to sign a contract with a builder, with the result that the architects were dismissed and had to sue for their commission. The trial justice held that it was a question of fact for the jury to decide whether or not the refusal of the architects to omit that clause constituted a breach of their contract of employment. Unquestionably the architects in such a case should recover for the work done, the contract being severable, and the only question of difficulty is whether the owner could dismiss them and cause them to lose the profits which they would have made upon the superintendence.

The phrase requiring performance "under the direction" of the architect must be considered in connection with the intent and purpose of the contract as a whole. It has been held that these words do not authorize the architect to reduce the thickness of a concrete column foundation. Yet in another case where there were numerous different contractors, each of whom was required to furnish his own scaffolding, the architect, to hasten matters, first arranged with each contractor to have his share towards paying the carpenter to furnish all the scaffolding deducted by the owner from his contract price and then ordered the carpenter to do the work. Later the owner refused to pay the carpenter, but a recovery was permitted upon the ground that the owner did not suffer any from the change in the method of procedure and the architect had thereby hastened the construction of the building, which was one of the objects of his agency. This important phrase is ordinarily taken to refer to the sufficiency and character of the materials to be used and the work done, and does not confer power upon the architect to make a change in the materials named in the specifications.

The phrase just considered is often expanded into the form "under the direction and to the satisfaction of" a certain architect, which has also received much legal attention. One of the best considered cases states this to require "only such supervision and direction by the architect looking to the execution and completion of the work according to the plans and specifications as may be proper to be given to effect that end. Such provision makes it the duty of the architect to see that the contract is complied with, not violated." In some jurisdictions the requirement of the satisfaction of the architect is held to constitute the architect the sole arbiter between the parties. Then the architect steps from his position of an employee of the owner and enters upon that sacred judicial duty of deciding fairly, honestly and impartially between two interested parties. This again brings us to the question which has already been touched upon, what is or should be "satisfaction" of the architect. It means legal satisfaction or in a manner satisfactory to the mind of a reasonable man. If the work has been performed *substantially* in compliance with the contract, the law will hold the architect to be satisfied.

Most important in this connection is the theory of substantial performance now almost universal and which seems to have escaped the attention of many architects. This is an equitable principle which the courts have established to prevent the forfeiture by a contractor of his money and the unjust enrichment of the owner when the owner or architect on technical or frivolous objections refuse to pay the contractor. Where the defects or omissions by a contractor are not numerous or are unimportant, technical, or inadvertent, and where there has been a *bona fide* attempt to perform upon the contractor's part, then such contractor can recover from the owner certain compensation even without the architect's certificate or satisfaction, etc. Such recovery or compensation is ordinarily the contract price less a reasonable sum for the omissions or defects. It is interesting to note what the courts have considered a substantial performance. One of the controlling features is the relation of the value of uncompleted, omitted or defective work to the contract price. The following are a few examples of substantial performance: Contract price \$200, defects \$25; contract price \$800, defects \$75; contract price \$2,000, work unperformed \$120; contract price \$7,000, defects \$275; contract price \$12,650, deviations from plans, etc., \$380.20; contract price \$48,000, unfinished work \$2,274.92, the owner taking possession and refusing to pay over any of \$14,209.37 retains; contract price \$231,698, where the owner claimed defects of \$6,329, while the contractor admitted \$406, and where the contractor claimed \$29,150 for extras and the owner admitted \$6,155. As for the character of work or omissions or deviations which have been allowed as substantial performance, the following are from different court decisions: 1. Where some woodwork was not properly grained and finished; 2. where the size and kind of rafters were changed without injury to the house; 3. where the boards used for clapboards and flooring were wider than specifications, but where the usefulness and value of the house were not impaired; 4. where the tie rods in the cement floor were omitted; 5. where some clothes closets did not receive the three coats of plaster; 6. where

in the foundation walls the header course was put every three feet instead of two, no sill made for rear cellar window, only one row of cross-bridging in each tier of beams instead of two, no anchors furnished for the first floor, one flue left rough, in the header courses requiring perfect brick and also where brick with no defects were specified many half bricks had been put in; 7. and even where the roof and chimneys of a house were not well supported, the folding doors were not well hung and casings thereto not well fastened, the tarpaper and clapboards in some few instances were not well put on, one door and casing were not fitted so that the door would shut, the roof sagged but seemed tight, which defect could be remedied by putting supports under it which could be done without disturbing the other parts of the house or its occupants.

We can now deduce a practical rule for substantial performance of contracts under \$25,000, that, provided the contractor has honestly attempted to complete his contract and particularly where he has followed the directions of the architect or owner, and where the omissions or defects do not pervade the whole work or make the object of the parties impossible or difficult of accomplishment, or where the usefulness or value of the construction is not materially impaired, and provided that the cost or reasonable value of correcting such defects or omissions does not exceed six per cent of the contract price, then there has been a substantial performance. The same rule with the exception of the percentage is applicable for contracts above \$25,000, but no fixed percentage can be given or is deducible from the adjudicated cases. Each case must be governed by its own particular circumstances. The rule of compensation in such cases varies, the owner being allowed either the cost of completing the work or correcting the defects, provided it is reasonable or the difference between the value of the building which he has and the building he would have had if it had been erected strictly in conformity with the plans and specifications. These cases permit recovery without the architect's certificate, which would seem to imply that under such circumstances an architect should at least issue a certificate of substantial performance.

In view of these considerations it would seem that the architect can save much time and expense for all concerned if he issues a certificate of substantial performance instead of absolutely refusing any certificate as is the custom to-day. Provided the architect acts honestly, fairly, and reasonably in his determination of the balance due instead of making the owner confirmed in his opinion that the architect is solely his employee, there is a great opportunity here for the architect, since many times both owner and contractor will be willing to accept the compromise balance due and so fixed rather than become involved in a lawsuit with its attendant delays and expense.

In some jurisdictions where the satisfaction of an architect is required, it is practically held that the only excuse whereby a contractor can prevent a forfeiture of his money is by showing a fraudulent collusion between the owner and the architect, and that the question of good faith on the part of the architect is immaterial. This certainly requires that an architect in such jurisdictions

should look well to his determinations and should have substantial, honest and legal grounds for refusing to declare his satisfaction. Especially is this so where the contractor has tried to follow the plans and specifications and put into the building only those materials accepted by the architect; where all the work has been done under the eyes of the architect or his clerk; and where the omissions and defects were principally, if not entirely, due to unauthorized changes or alterations permitted or ordered by the architect or his clerk.

Some contracts require "the satisfaction of owner and architect." Even with such a requirement it is held that if the materials furnished were satisfactory to the owner's agent or architect on the ground and the work was done according to plans and specifications, the contractor was entitled to recover. In another instance the acceptance by the architect was held to bind the owner. Where the architect expected that his plans and specifications would give a water-tight job, yet if the contractor has conformed to such plans and specifications which did not produce such a job, at law the architect and owner must be satisfied.

The contract requirement of this nature which seems to give the architect the most trouble is the "satisfaction of the owner." Where that is a contract requirement or the sole requirement, the architect should not on that ground refuse to issue his certificates because that clause has nothing to do with him or his certificates. The mere fact that he knows that the owner will not pay upon the certificate or even that he is told not to issue the certificate because the work is unsatisfactory should not deter the architect from performing his legal and moral duty. It might be noted that an owner's objection must be in good faith, and it is always a jury question whether as a matter of fact the work is well done or not. Where the work is done under the supervision of the owner and his directions are followed in the execution of the work, then his refusal to be satisfied when the work is completed has little legal effect.

Another viewpoint of the "direction" of the architect is very important, namely, the responsibility where such direction is the cause of a result not contemplated by the contract. In municipal contracts it is held that this word relates to the results to be obtained, and did not make the contractor the servant of the city. Where earth was directed to be piled against a cement bulkhead while it was not yet set, against the objection and protest of the contractor, which caused a cracking of the bulkhead, held that the contractor was not liable for the defect. Where a defect was due to the inferior quality of sand used, the contract requiring that the sand should be taken from the premises, which was done over the contractor's objection, held no defense to the contractor's action for a balance due him. Where the owner is to supply something and later, trouble can be traced to the material so furnished or to the lack of such materials, and where the work has been done under the direction of the architect, naturally the contractor is not responsible for such defective work, or because the construction does not serve the purpose for which it was erected.

Still another form of this contract requirement needs some attention, to wit, "under the direction and to the satisfaction of A. B., architect acting for the purposes of

this contract as agent of the owner." While it is probable that the powers and authority of the architect are somewhat more broadly construed under this form, yet in view of the latest case upon this expression, but little practical difference can be seen. Under this clause the architect has no authority to waive the protective provisions of the contract for the owner or its various conditions. It is probable that in the matter of using somewhat different but equally good materials, or in making immaterial changes, that this form allows the architect more freedom. Practically then, it is a better and safer form for the architect than the present uniform contract expression.

There has been a question raised as to whether the common clause that the architect's decision "as to the true construction and meaning of the drawings and specifications shall be final" was legally valid. Just lately it has been held so by the Supreme Court of the United States. Another court states, however, that it implies a condition that the architect's decision shall be honest. The action of an architect under this clause is considered as the award of a referee under a submission to arbitration. This is a unique position for the architect as he is not bound by any oath or public professional declaration to act fairly and honestly between the parties in this respect. This phrase does not give the architect power to determine what the contract between the parties is, or to construe the contract; the arbitration as stated merely covers the "drawings and specifications." The fact that it does not mention the contract seems to have escaped the notice of many architects, as is shown by their actions. It is hardly necessary to state that this does not give the architect the power to require of the contractor what is not in his contract. In his determinations under this authority the architect must keep in mind several very general legal propositions; that he must as far as possible follow the strict wording; that requirements should be interpreted in the sense in which the contractor would naturally understand them; if there are conflicting provisions, they should be construed most strongly against the party to the contract who drew or had drawn the contract, plans and specifications; the specifications should be considered as a whole if there is any conflict in the various parts; proper and due consideration must be had of the character and cost of a building and its contemplated use; and above all he must act and decide honestly even if it requires a decision which shows mistakes, carelessness, or negligence in his plans or specifications.

A few judicial determinations of questions arising upon specifications will show the manner and way in which the architect should act. The ordinary architect in his decisions is so prone to fall back upon his clauses that the materials must be the "best," and the work done in a "good workmanlike manner," that he must realize that those expressions depend upon personal opinion, and he must not be too arbitrary in his personal opinion. If it comes to a lawsuit, it becomes a question for the jury and they ordinarily have little sympathy with arbitrary, technical, and often unreasonable professional opinions and requirements. In a very recent case "good workmanlike manner" was held to mean

with fair average skill, and not with the highest skill known to the trade. In another instance it was held to relate to the thing specified to be done, and could not be construed to require the contractor to erect a pier or place an iron column under the end of a girder, which was not contemplated by the contract. Where a foundation was required "to be made perfectly water-tight and guaranteed," it was held that did not constitute a guaranty by the contractor that the cellar should be water-tight where the specifications prescribed in detail the manner of construction and the material to be used, but was a guaranty only of the contractor's compliance with the specifications, and of the effectiveness of his work in matters about which he had a discretion. A contractor to do all the "carpentry" or "carpenter work" is not required to cover a roof with tin, or to furnish iron window frames. Upon a bidding the work specified was "for an iron inner dome and other ornamental iron" for a State Capitol, but that could not be held to include copper bronze statues.

Regarding the determination of the materials which are usable, the courts have shown a reasonableness and practical construction at great contrast with many of the decisions of some superintending architects. Where "sandstone of a quality approved by the architect" was required, and the architect thereupon ordered "the best sandstone that can be procured," it was held that such was not the stone contracted for, and the contractor could recover from the owner for the difference of cost to him caused by the architect's order. Another contract called for "Wilkeson stone," and there was only one quarry of that kind of stone open at the time of the signing of the contract. The architect refused to let the contractor open

another quarry of the same stone, but required him to get the stone from this one open quarry. It was held that his decision was wrong and improper. Specifications called for "San Domingo mahogany," and it being shown that that was a trade name in the locality meaning any good figured mahogany of the same density as San Domingo mahogany, hence the contract was satisfied by a good Mexican mahogany which was approved by the architect. In general the courts say that the contractor is only called upon to do what a fair, reasonable, and practical construction of the plans and specifications require. Further, that where work is done under directions when there is a disagreement between the plans, specifications, and details, that the way said work was done will prevail over the literal meaning of the plans, specifications, and contract.

No comment seems necessary after these examples as to the way that an architect should act and decide when these questions are put before him as an arbitrator.

Undoubtedly much of the hesitation and many of the decisions of architects in the past have been due to the fear of losing their employment. Ordinarily the builder's contract is under seal so that the architect's power under the clause last considered is existing and legal until revoked by the owner by another sealed instrument, and naturally such an attempted rescission of this part of the building agreement by the owner would cause a rescission of the entire contract. This would not give the owner cause to discharge the architect and if he was so discharged he could unquestionably recover for the services already performed and for the profits which he would have made had he been permitted to continue in the employment.

Editorial Comment and Miscellany.

PLATE ILLUSTRATIONS — DESCRIPTION.

ENGINE HOUSE, BALTIMORE, MD. PLATE 159. The exterior is of rough dark red brick of brownish tone laid in cement of natural color, the joints being raked back. The trimming is of Indiana limestone and all woodwork is painted dark green. The walls of first floor are tiled the entire height, while all ceilings throughout are of sheet metal. There is no connection between the hay-loft and the balance of the second story, both as a protection against fire and to prevent dust. The hose shaft is tall enough for hanging the extra hose at full length when drying out. The small cellar at the rear provides for the heating apparatus and coal bunker. The building is non-fireproof. The total cost, including plumbing,

heating and wiring, was \$25,500. The number of cubic feet measuring from average of roof to first-story floor is 98,637 cubic feet, making the cost price per cubic foot 25 $\frac{5}{10}$ cents.

BANK OF YOLO, WOODLAND, CAL. PLATES 164-166. The exterior is of a low-toned buff brick with iron spots of considerable variation in size and terra cotta to match. The woodwork of the cornice is stained a golden brown;

the terra cotta blocks beneath being a harmonizing shade of green. The tiles of overhang and coping are unglazed and red in color; the columns at entrance of Verde Antique marble with Pavenza marble used for wainscoting and counter front; base of Verde Antique and floor of white marble. The counter screen is of



HOUSE AT DETROIT, MICH.

Built of gray standard brick made by The Ohio Mining & Manufacturing Company. Malcomson & Higginsbotham, Architects.



STATUE FOR CHURCH OF
ST. DENIS, LOWERRE, N. Y.
Executed in gray terra cotta by the
Atlantic Terra Cotta Company.
Four feet in height.
Chelsea Realty Company, Architects.

equitable as between Owner and Contractor, applicable to work of almost all classes, binding in law, and a standard of good practice. The related Standard Forms now approved by the Institute are: Invitation to Bid; Instruction to Bidders; Form of Proposal; Form of Agreement; Form of Bond; and General Conditions of the Contract. These forms are not put forth to diminish the use of the "Uniform Contract," published under the joint auspices of the American Institute of Architects



DETAIL FOR BANK BUILDING.
Executed by The South Amboy Terra Cotta Company.
Joseph Steinam, Architect.

and the National Association of Builders. Advantages of untold value will accrue from the standardizing of documents similar to this, if they can be made to represent the best practice, and by their clearness, equity and

bronze-finished Pompeian green, while the walls and plaster ceiling are painted in ivory tones and stippled. The woodwork is of mahogany. The building is heated and cooled by a blower system in connection with steam coils and water sprays. The total cubical contents are 147,000 feet figured from bottom of footing—2 feet below grade, excepting in boiler room—to top of coping. The total cost of building, including counter and screen together with vault work was \$63,000, making the cost per cubic foot approximately 43 cents.

STANDARD DOCUMENTS OF THE A. I. A.

THE Standing Committee on Contracts and Specifications has been at work for five or six years, endeavoring to make the Standard Documents of the American Institute of Architects clear in thought and statement,



PARK BUILDING, HOBOKEN, N. J.
Built of Natco Hollow Tile made by the National Fire Proofing
Company.
James E. Ware & Son, Architects.

final interpretation in courts of law become generally understood and accepted by owners, architects and builders. Provision has been made by the committee for revisions by the Institute at intervals. It is sincerely hoped that through their use and from the criticism of both architects and builders throughout the country, the Standard Documents of the American Institute of Archi-



DETAIL FOR STORE BUILDING.
Executed by Conkling-Armstrong Terra Cotta Company.
H. J. Klutho, Architect.

itects will eventually become the basis of all building contracts, as well as a recognized code of procedure, representing the judgment of the Institute as to what, in that respect, constitutes the best practice of the profession. The Standing Committee on Contracts and Specifications has during the preparation of the Standard Forms consisted of the following members of the Institute: Grosvenor Atterbury, chairman; Allen B. Pond, secretary; Frank C. Baldwin; William A. Boring; Frank

Miles Day; Frank W. Ferguson; G. L. Heins, deceased; Alfred Stone, deceased.

SCHOOL BUILDINGS IN LONDON.

THE London County Council states that, while of secondary importance compared with the teaching staff, the question of the condition and sufficiency of the school buildings must always be one which calls for the continued action on the part of the Council authority. The changes in educational ideals and the movements of population cause the school buildings to become obsolete and the local authority of London always has before it

the problem of difficult and costly buildings. The point has often been raised, is it advisable to build any school which will last for more than twenty years? Schools which

room has given place to the hall; sufficient classrooms are provided so that each class shall have its separate room, and the amount of floor space provided for each child has been raised from 8 sq. ft. to 10 sq. ft.



DETAIL BY NEVILLE & BAGGE, ARCHITECTS.
New York Architectural Terra Cotta Company, Makers.

were built twenty years ago had as few classrooms as possible with a southern aspect, while now it is the custom to plan for a maximum amount of direct sunshine in the rooms. Sanitation, lighting, ventilation, heating, cloak rooms, size of rooms, provision of halls, teachers' rooms, etc., have completely changed and are changing rapidly. In the new schools the feature is the size of the classrooms which are



DETAIL BY DWIGHT H. PERKINS, ARCHITECT.
The Northwestern Terra Cotta Company, Makers.

through the heart of ancient Rome and traversing much of



PITTSBURGH MERCANTILE BUILDING, WOODLAWN, PA.
Built of gray Impervious Brick furnished by the Columbus Brick & Terra Cotta Company.
Rutan & Russell, Architects.

planned to accommodate forty pupils in the case of senior departments, and forty-eight in the infants' departments. The erecting of a domestic economy, or a handicraft center on the same site is included in the contract for the main school. Where the school is to be enlarged in the near future the halls are made of the requisite size to accommodate the completed school. The large school-

ELECTRIC RAILWAY TO CONNECT ROME WITH OSTIA.

THE scheme of a French company, which is now being considered by the Municipal Government of Rome to connect Rome with Ostia on the coast by an electric railway has revived the conflict between the lovers of ancient and those of modern Rome. The plan includes the tunneling of the Palatine Hill from the Piazza Venezia to the Porta San Paolo, hence cutting under or



CARTOUCHE FOR HOTEL.
Executed by The Winkle Terra Cotta Company.
Barnett, Haynes & Barnett, Architects.



LOOSE-WILES FACTORY, MINNEAPOLIS, MINN.

Faced with dark sepia crown tiles, 4x12 $\frac{1}{2}$ inches in size. An example of the interlocking terra cotta facing tile for factory construction made by the Twin City Brick Company.

Hewitt & Brown, Architects.

what is known as the Zona Monumentale in a more or less deep cutting. Beneath this surface lie hidden many important relics of ancient Rome yet unexplored by the archaeologist. As a member of the Higher Council of Antiquities, Commendatore Boni has again protested against any unnecessary destruction of what should be the objects of future archaeological research by an open railway cutting excavated at a depth which must inevitably carry the railway lines right through their walls.

IN GENERAL.

Goldner and Goldberg, architects, have removed their offices to 391 East 149th street, New York.

Edward G. Garden, architect, formerly of St. Louis, has removed his offices to Phelan Building, San Francisco.

Charles W. Eldridge has removed his offices to 1227 Granite Building, Rochester, N. Y.

John P. Connellan and Walter H. Cassebeer have formed a copartnership for the practice of architecture, with offices in the Insurance Building, Rochester, N. Y.

Clare C. Hosmer, architect, has withdrawn from the firm of Betts & Hosmer, and opened offices in the Wells Building, Milwaukee, Wisconsin. Manufacturers' catalogues and samples desired.

Rudolph Weaver, architect, has been appointed Professor of

Architecture and Supervising Architect at the State College of Washington, Pullman, Washington. Manufacturers' catalogues and samples desired.

The general and sales offices of the Hydraulic-Press Brick Company, Brazil, Indiana, have been removed to the Board of Trade Building, Indianapolis.

Congress Hall, at Sixth and Chestnut streets will be restored under the direction of the Philadelphia Chapter of the A.I.A.

The Indianapolis Architectural Club was organized October 13th with a membership of about forty draftsmen and others interested in architecture and the allied arts. Claude W. Beelman was elected president and S. C. Duvall secretary.



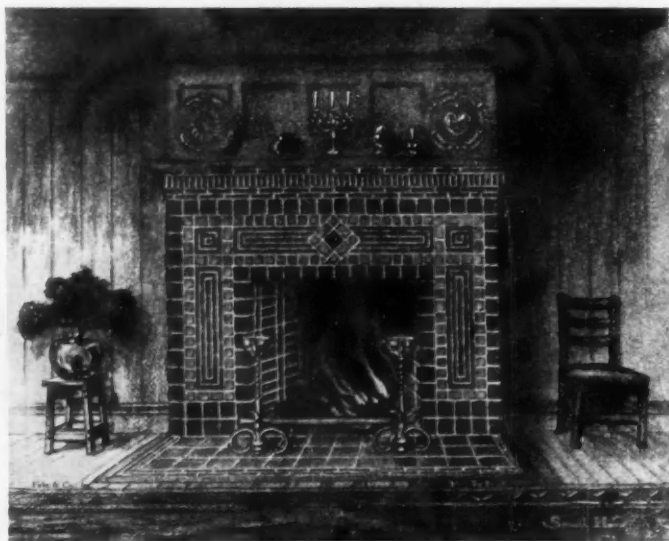
DETAIL BY MATTHEW SULLIVAN, ARCHITECT.
The New Jersey Terra Cotta Company, Makers.

The Pittsburgh Chapter A. I. A. has issued a pamphlet in which is set forth the improvements which are proposed for the city of Pittsburgh.

The 27th annual exhibition of the Architectural League of New York will be held in the building of the American Fine Arts Society, 215 West 57th street, New York City, from January 28th to February 17th inclusive. Exhibits will be received January 11th and 12th only. Exhibits discharged February 19th.

Henry Snyder Kissam, chairman of the committee on education for the Society of Columbia University Architects, announces a series of lectures to be held weekly beginning November 14th and extending to January 23d. These lectures are divided into two courses, one treating of the Theory of Architecture, and the other of the Theory of Professional Practice. Men prominent in architecture and civil engineering will lecture.

Laurence F. Peck announces that he has opened offices for the practice of architecture at 331 Madison avenue, corner of Forty-third street, New York City.



FIREPLACE BY LORD & HEWLETT, ARCHITECTS.
Designed in "Tapestry" brick furnished by Fiske & Co., Inc.

BUILDING OPERATIONS FOR NOVEMBER AND
PAST ELEVEN MONTHS.

BUILDING statistics from forty-four representative building centers throughout the country as reported to and compiled by *The American Contractor*, New York, show a loss of 4½ per cent for the month of November as compared with November, 1910, whereas the past eleven months show a loss of 2½ per cent as compared with the same months of the past year.

OFFICIAL NOTICE.

OFFICE OF THE COUNTY CLERK OF MILWAUKEE COUNTY,
WISCONSIN, NOV. 28, 1911.
TO ARCHITECTS.

NOTICE is hereby given that competitive designs for the new House of Correction will be received at the office of the County Clerk at Milwaukee, Wis., until the first day of February, 1912, at 10 o'clock, A.M. All designs must comply strictly with the rules laid down in the program on file in the office of the county clerk.

Architects desiring to enter this competition must file an application with the county clerk, who will furnish each competitor with a copy of the program and with a topographical map showing the contours of the land and the suggested location for the buildings.

The Jury of Experts who will pass upon the merits of the designs submitted in competition, and who will recommend the award of prizes, is composed as follows: Allan D. Conover, Architect, Madison, Wis.; Richard E. Schmidt, Architect, Chicago, Ill.; Dwight H. Perkins, Architect, Chicago, Ill.; Henry Wolfer, Warden of Minnesota State Prison, Stillwater, Minn.; J. A. Leonard, Superintendent of Ohio State Reformatory, Mansfield, Ohio. Four prizes will be awarded to the successful competitors.

By order of the Joint Committee on House of Correction and Laws, Legislation, and Rules.

MARTIN PLEHN, *County Clerk*.

Milwaukee County, Wis.

"TAPESTRY" BRICK

TRADE MARK—REG. U. S. PATENT OFFICE

BULLETIN

RECENT WORK, illustrated in this issue of

THE BRICKBUILDER

Fireplace

Page 268

LORD & HEWLETT, Architects

FISKE & COMPANY INC
FACE BRICKS) ESTABLISH
IRE BRICKS) ED IN 1864

25 Arch St., Boston

Arena Building, New York

BRICKLAYERS' TREATY.

FOUR YEARS' AGREEMENT EFFECTED AFTER MANY
CONFERENCES.

A FOUR years' bricklaying agreement to begin Jan. 1, 1912, has been effected after innumerable conferences since last January, when the old agreement between the Mason Builders' Association and the bricklayers' unions of Greater New York ended. The present wages of 70 cents an hour, with double wages for overtime and Sunday and holiday work, will continue for two years, but for the other two years the wages will be raised to 75 cents an hour. The agreement affects eleven thousand bricklayers. The present wages of 70 cents an hour are said to be the highest ever paid to building mechanics in any city.

WANTED — The 1905 and 1906 volumes of *The Brick-builder*, including the special competition numbers. No plates, text only for binding. Must be in good condition. Address Frank J. Saum, 1114 Rutger St., St. Louis, Mo.

BOILERS AND RADIATORS

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Plain and Ornamental Direct Radiators

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Cork Carpet in plain colors.

Elastic, Noiseless, Durable.

Is practical for rooms, halls, and particularly adapted to public buildings.

Should be placed on floors under pressure and best results obtained only by employing skilled workmen.

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Registry of Deeds, Salem, Mass. C. H. Blackall, Esq., Architect.

A small book on this subject, and quality samples, mailed on application. We solicit inquiries and correspondence.

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COMPETITION FOR A SMALL HOUSE OF THE BUNGALOW TYPE.

To Be Built of Brick.

Cost not to Exceed \$3,000.

FIRST PRIZE, \$500.

SECOND PRIZE, \$250.

THIRD PRIZE, \$150.

FOURTH PRIZE, \$100.

MENTIONS.

PROGRAM.

THE problem is a small detached house of the Bungalow type. The outer walls and foundations of the house are to be built of Brick.

Three bedrooms must be provided for in the plan. Two of these may be placed in an attic story. Ample basement room is to be provided.

The location may be assumed in any town, small city, or suburb of a large city.

The cost of the house — exclusive of the land — shall not exceed \$3,000. The method of heating, the plumbing, other fixtures, and finish, to be governed by the limit of cost.

Houses of this type of construction have been built in different sections of the country, and from the data which has been gathered concerning the cost of a number of these houses, an average price of 15 cents per cubic foot has been obtained. This cost is given as the basis upon which the size — figured in cubic feet — of each house submitted in this Competition must be approximated.

Measurements of the house proper must be taken from the outside face of exterior walls and from the level of the basement floor to the average height of all roofs. Porches, verandas, and other additions are to be figured separately at one-fourth (25 per cent) of their total cubage. The cost of porches, etc., is to be included in the total cost of the house (\$3,000).

On this basis of figuring — the number of cubic feet multiplied by the cost per cubic foot — the jury will not consider any designs which exceed the limit of cost.

The particular object of this Competition is to encourage the use of Brick for Small Houses. Thousands of houses costing from \$2,000 to \$3,000 are being built in this country every year. The larger part of them are of wood construction. The cost of brick is very little more and its advantages over wood as a building material are obvious.

DRAWING REQUIRED. (There is to be but one.)

On one sheet a pen and ink perspective, without wash or color, drawn at a scale of 4 feet to the inch. Plans of the first and second floors (if there is a second floor) at a scale of 8 feet to the inch. A section showing construction of exterior wall, with cornice. Heights of floors to be given on section. Enough detail sketches to fill out sheet. In connection with the plan of the first floor show as much of the arrangement of the lot in the immediate vicinity of the house as space will permit. Give on the drawing all measurements used in finding the cubage of house, together with the total cubage. Present this data at a scale which will permit of two-thirds reduction. The plans are to be blocked in solid. A graphic scale must accompany the plans.

The size of the sheet is to be exactly 26 inches by 20 inches. Strong border lines are to be drawn on the sheet 1 inch from edges, giving a space inside the border lines 24 inches by 18 inches. The sheet is to be of white paper and is not to be mounted.

The drawing is to be signed by a *nom de plume* or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The drawing is to be delivered flat, or rolled (packaged so as to prevent creasing or crushing), at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., on or before February 15, 1912.

Drawings submitted in this Competition are at owners' risk from time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

The designs will be judged by three or five members of the architectural profession.

First consideration will be given to the fitness of the design, in an æsthetic sense, to the materials employed: Second — excellence of plan.

Drawings which do not meet the requirements of the program will not be considered.

The prize drawings are to become the property of THE BRICKBUILDER and the right is reserved to publish or exhibit any or all of the others. The full name and address of the designer will be given in connection with each design published. Those who wish their drawings returned, except the prize drawings, may have them by enclosing in the sealed envelopes, containing their names, ten cents in stamps.

For the design placed first there will be given a prize of \$500.

For the design placed second a prize of \$250.

For the design placed third a prize of \$150.

For the design placed fourth a prize of \$100.

This Competition is open to every one.

The prize and mention drawings will be published in THE BRICKBUILDER.

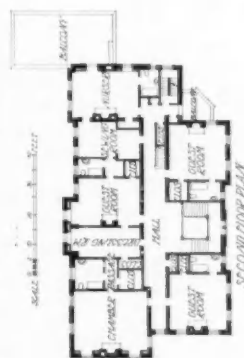
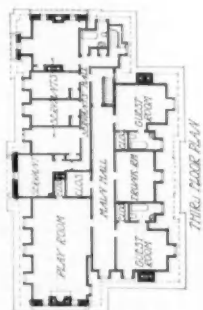
This Competition is conducted under the patronage of the International Brick and Clay Products Exposition Company and the drawings will be exhibited at the Clay Products Exposition to be held in the Coliseum, Chicago, March 7 to 12, 1912.

10761

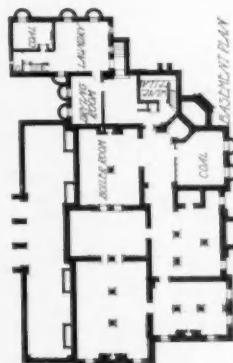
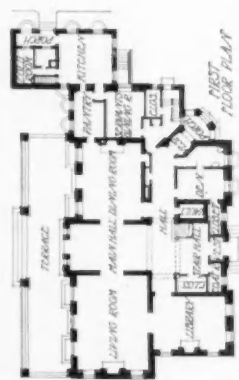


HOUSE AT ST. LOUIS, MO.
COPE & STEWARDSON, ARCHITECTS.

1700



HOUSE AT
ST. LOUIS, MO.
COPE & STEWARDSON,
ARCHITECTS.



M 70 U

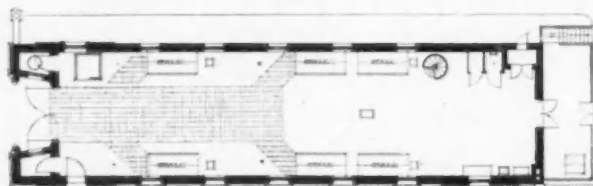
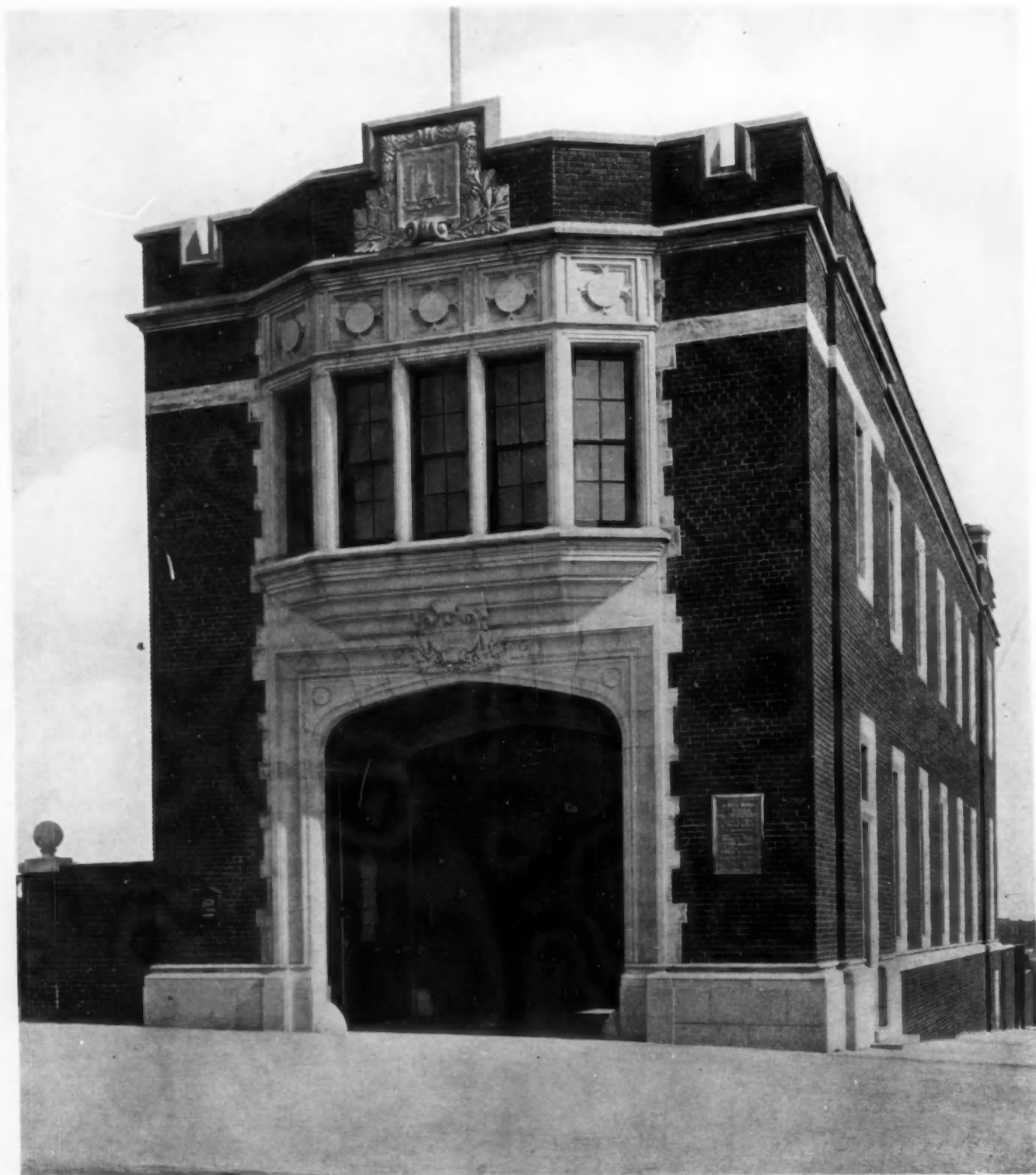


TWO ENTRANCES, HOUSE AT ST. LOUIS, MO.
COPE & STEWARDSON, ARCHITECTS.

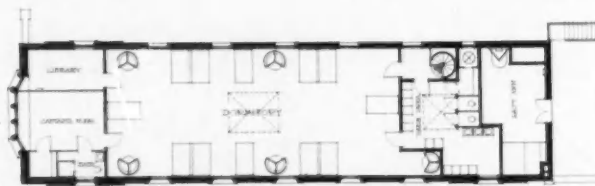
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FIRST FLOOR PLAN.

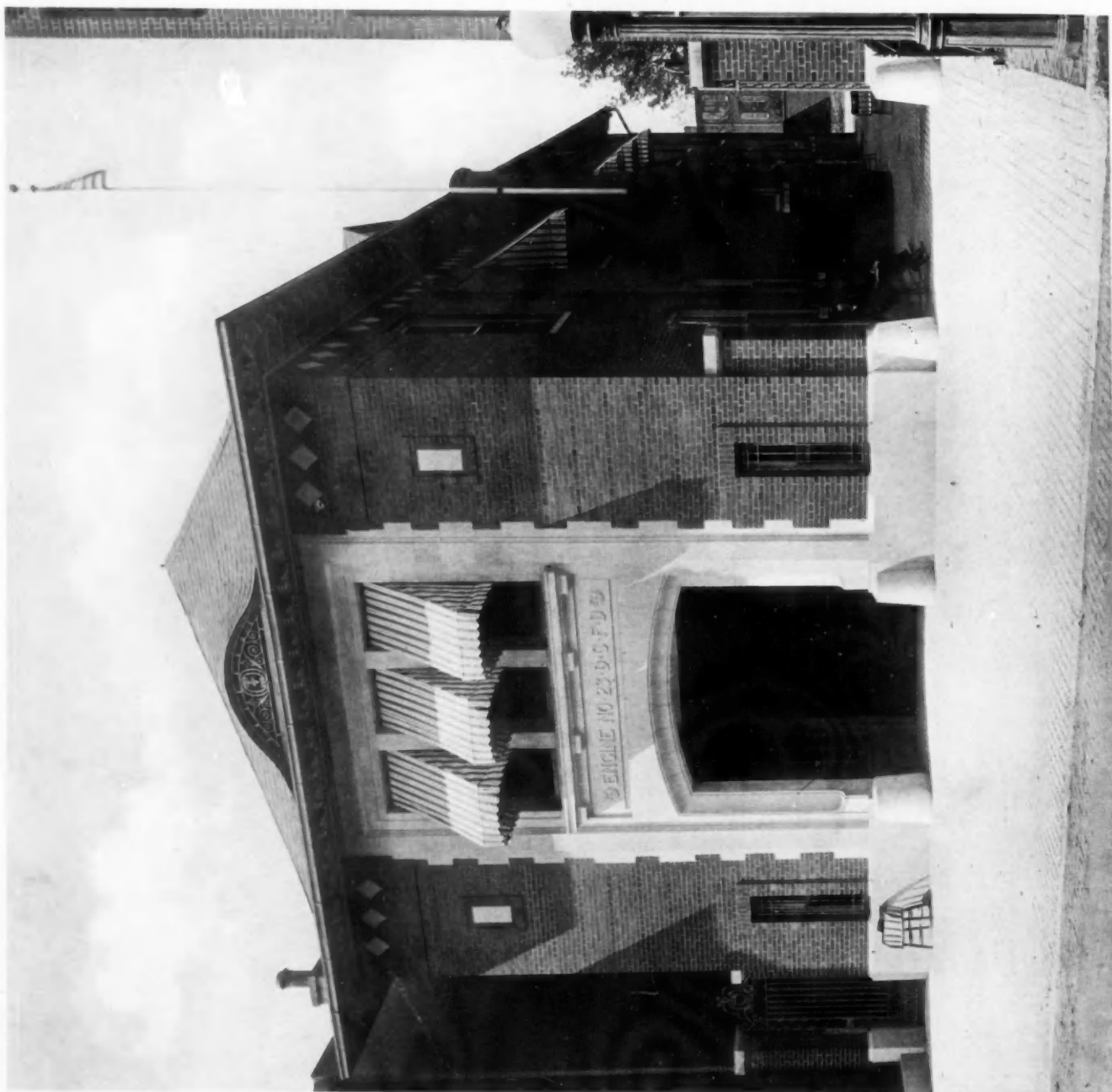


SECOND FLOOR PLAN.

ENGINE HOUSE, BALTIMORE, MD.
ELLCOTT & EMMART, ARCHITECTS.

U.C.F.M.

UofM



HORNBLLOWER
&
MARSHALL,
ARCHITECTS



-SECOND FLOOR PLAN-

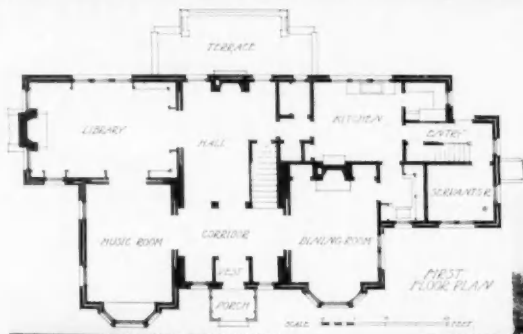
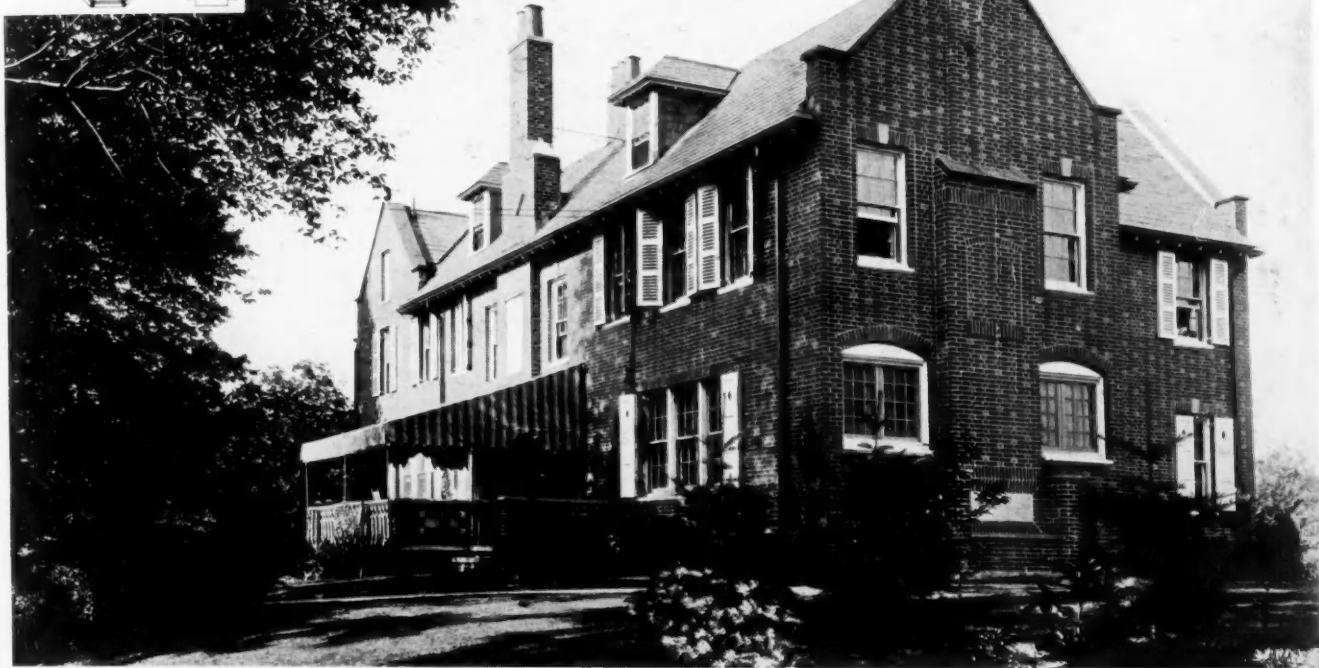
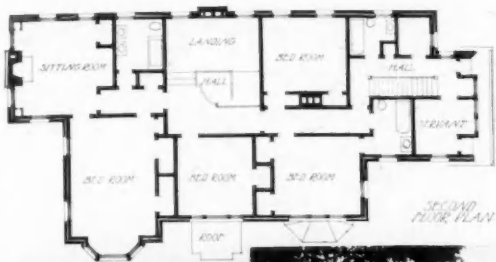
-FIRST FLOOR PLAN-

ENGINE HOUSE NO. 23,
WASHINGTON, D. C.

U of M



HOUSE AT WEST NEWTON, MASS.
FRANK CHOUTEAU BROWN, ARCHITECT.

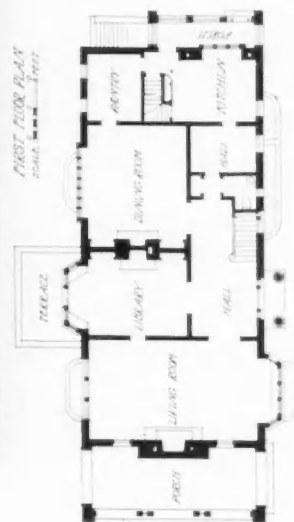


HOUSE AT WEST NEWTON, MASS.
FRANK CHOUTEAU BROWN, ARCHITECT.

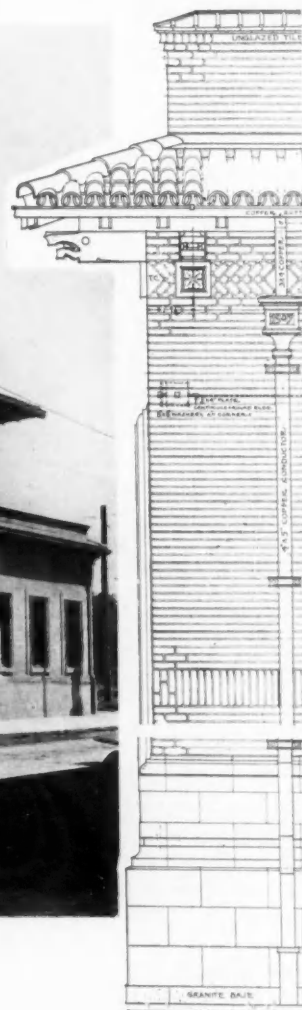
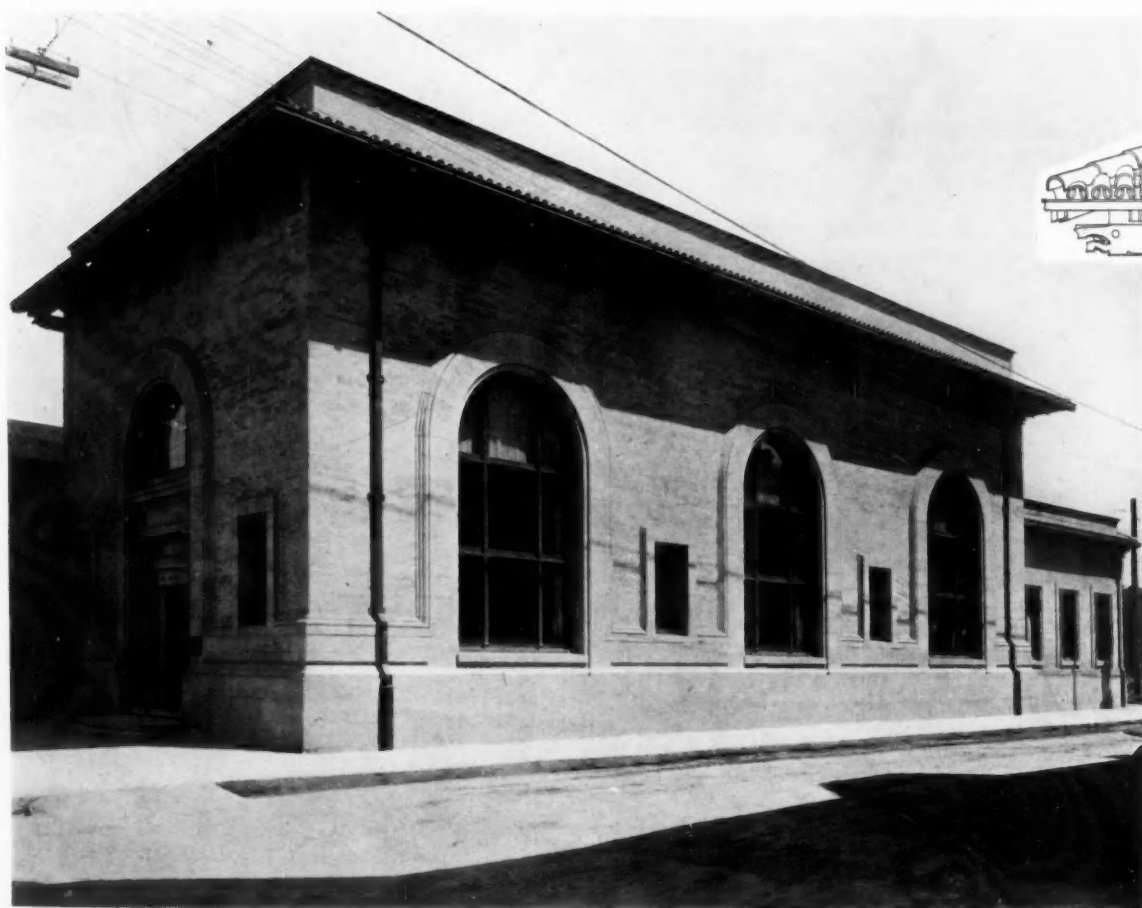
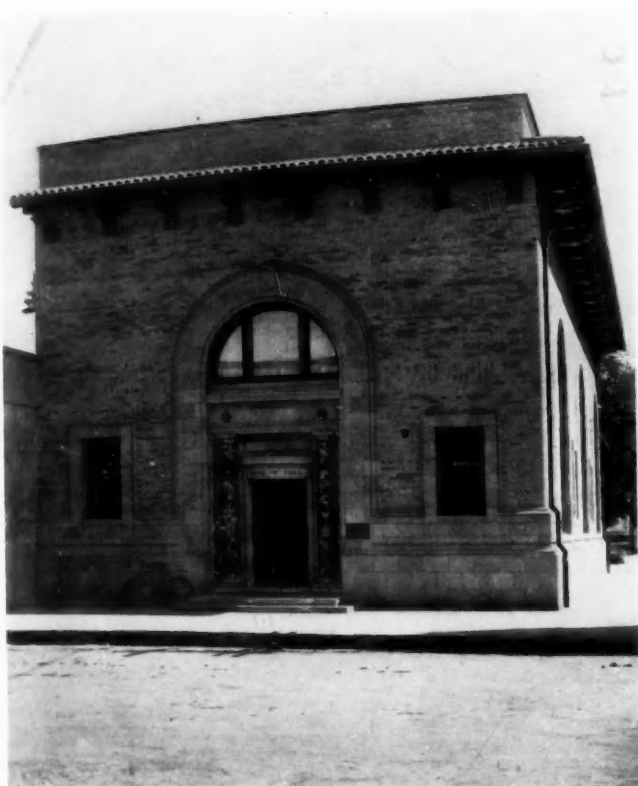
1890



HOUSE AT CLEVELAND, OHIO.
BUILT OF HOLLOW TILE TERRA COTTA BLOCKS WITH STUCCO FINISH.
FRANK B. MEADE, ARCHITECT.

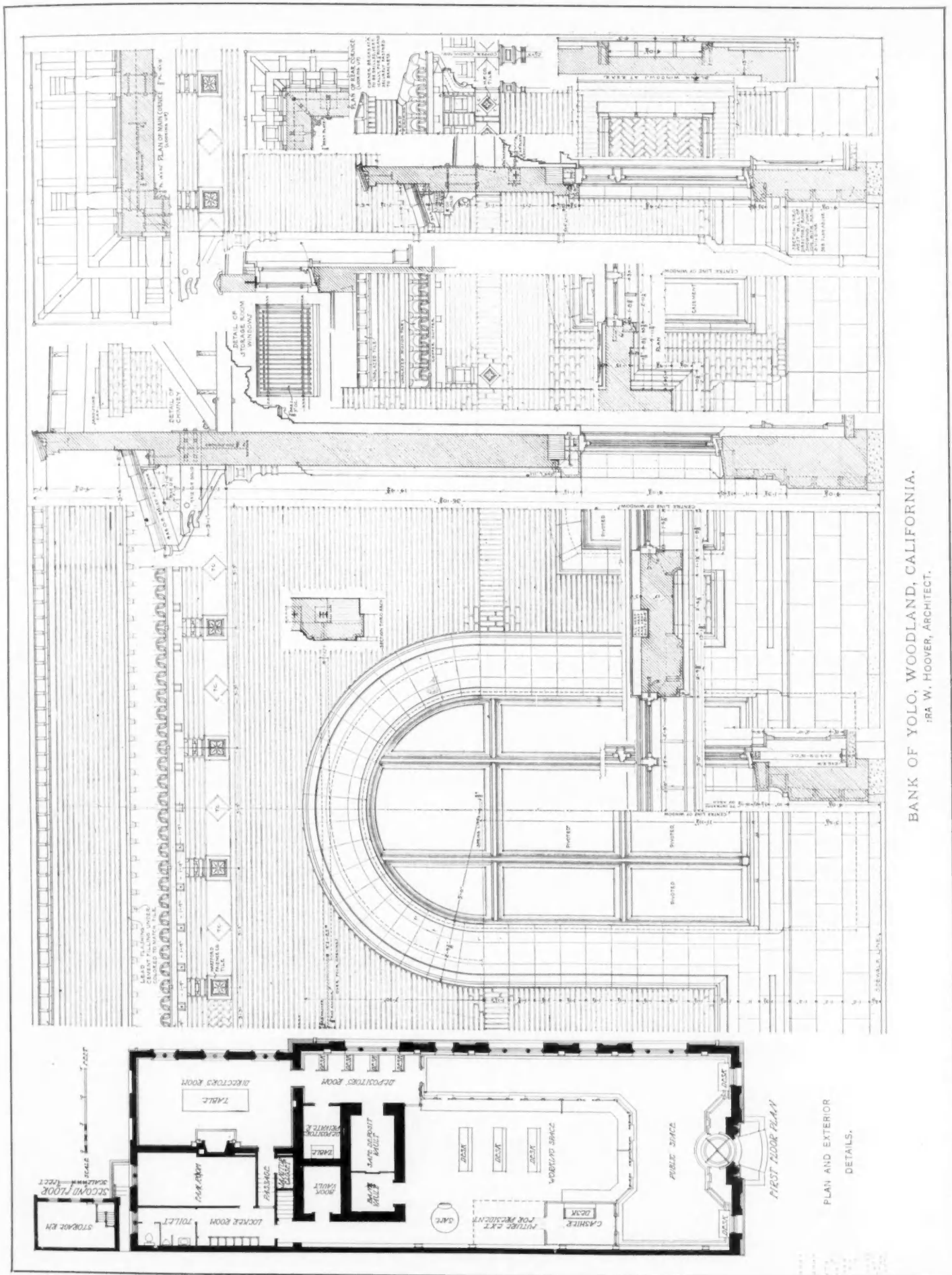


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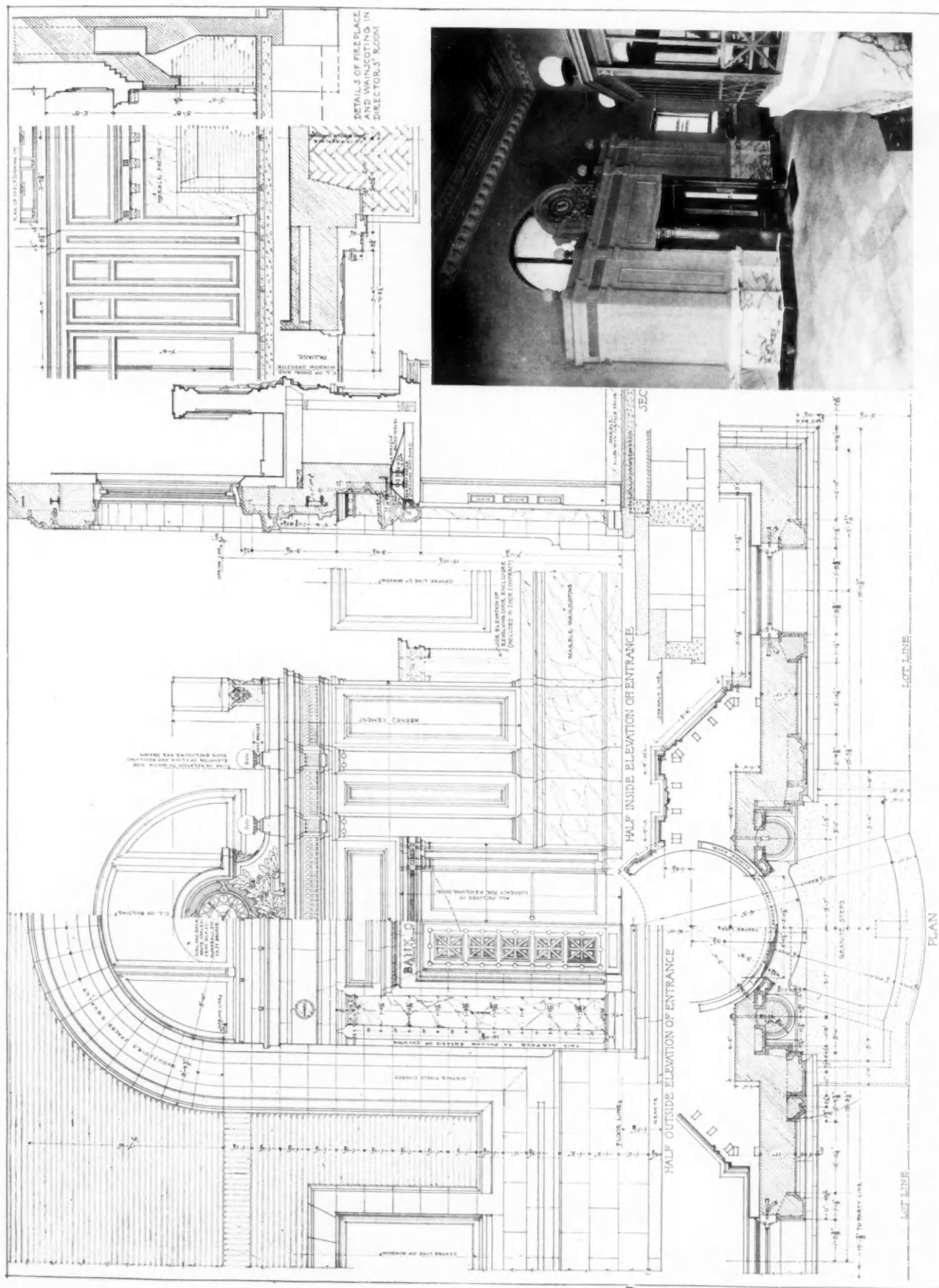
BANK OF YOLO, WOODLAND, CALIFORNIA.
IRA W. HOOVER, ARCHITECT.

1904



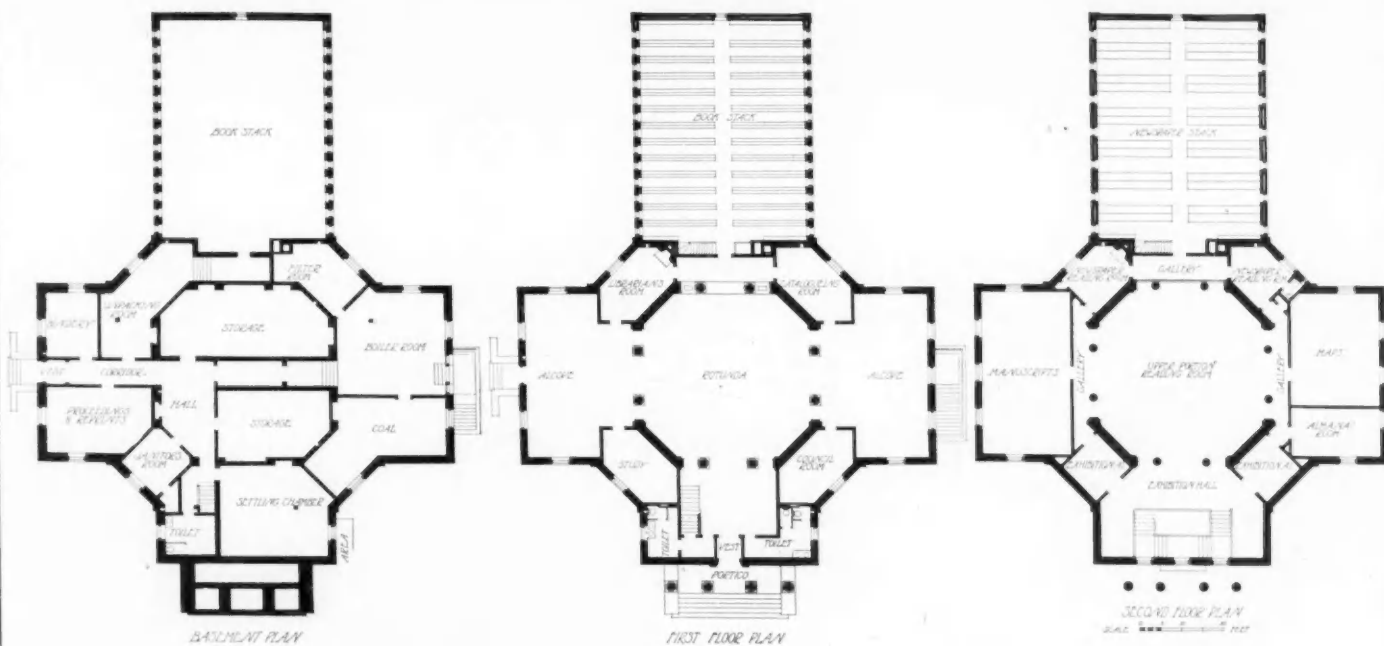
BANK OF YOLO, WOODLAND, CALIFORNIA.
IRA W. HOOVER, ARCHITECT.

M40U



ENTRANCE DETAILS, BANK OF YOLO, WOODLAND, CALIFORNIA.
IRA W. HOOVER, ARCHITECT.

M-100



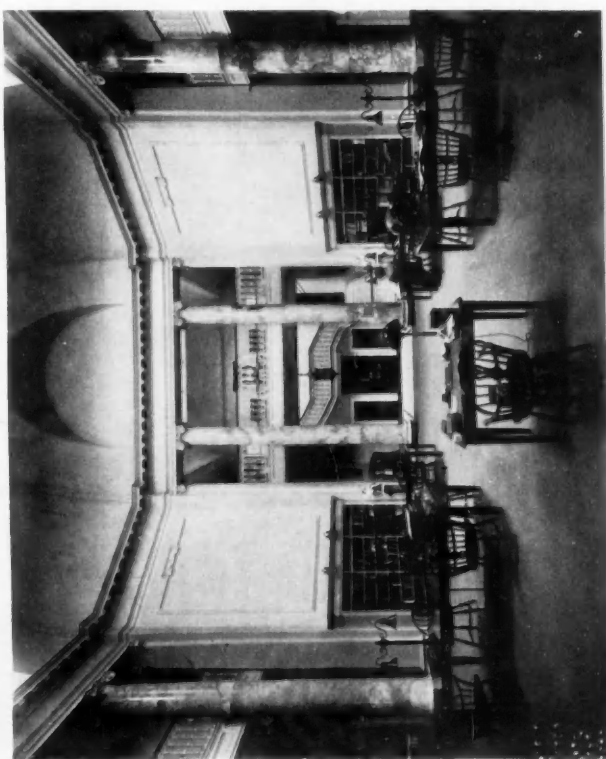
AMERICAN ANTIQUARIAN SOCIETY BUILDING, WORCESTER, MASS.
BIGELOW & WADSWORTH AND R. CLIPSTON STURGIS, ASSOCIATED ARCHITECTS.

1107 M

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